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COMPUTERWORLD

INSIDE

In Depth — Boost MVS performance with a fast, no-cost tune-up. Page 81.

Product Spotlight — Accounting software: A golden oldie that needs updating. Page 67.

Windows-to-OS/2 Presentation Manager conversion tool offered by Microsoft in bid to ease migration pain. Page 7.

Akers is optimistic about IBM's prospects for the coming year. Page 113.

U.S. proposes relaxing technology export restrictions to Eastern Bloc countries. Page 4.

Cincom maneuvers for market position as IBM and Computer Associates crowd database market. Page 10.

Advanced Technology: Ability to write data into handheld computers rather than typing it could provide biggest industry innovation since the graphical user interface. Page 25.

Amid junk-bond rubble, technology start-ups gain renewed interest from investors looking to put their funds to use. Page 87.

NASA finds Ada can dramatically cut software development cost but has not cut the number or severity of coding errors or improved performance. Page 31.

Three-year probation for Morris

Internet worm author won't pay restitution

BY MICHAEL ALEXANDER
CW STAFF

SYRACUSE, N.Y. — Robert T. Morris, the convicted author of a worm program that shut down thousands of computers on a national network, was sentenced Friday to three years' probation in a case in which traditional sentencing guidelines failed prosecutors and the judge.

Morris was ordered to pay a $10,000 fine during the first year of probation and perform 400 hours of community service. Morris, son of the chief computer scientist at the National Security Agency's National Computer Security Center, was also ordered to pay the monthly $91 cost of supervision during the probation.

After the sentencing, U.S. District Judge Howard Munson said that "half the people in the country will be angry with me and half will not." It was apparent to those in court that he had struggled with the case and had difficulty applying traditional remedies to an unprecedented computer crime.

To force Morris to make

Continued on page 112

Crunch time for Ashton-Tate

BY CHARLES VON SIMSON
CW STAFF

TORRANCE, Calif. — Ashton-Tate Corp. wasted no time filling at least part of the job when President and Chief Executive Officer Ed Esber stepped aside last week. However, while William P. Lyons was tapped as president and chief operating officer and will focus on day-to-day operations, long-term strategic leadership was left in doubt.

Esber resigned on April 30, citing personal reasons, including the recent birth of a son. Lyons, a 19-year IBM executive and previously general manager of Ashton-Tate's personal computer application division, was not named CEO.

"I am focusing on blocking and tackling," Lyons said. "Getting [Dbase IV] Version 1.1 out the door is our top priority. That is playing to my strengths; Ed has always been more interested in the strategic picture."

Customers seemed indifferent to the personalities involved and were only interested in results. "If the end of that soap opera means we will get better products faster, great," said Harold Pollard, PC manager at Uribe and Associates, an Oakland, Calif.-based environmental

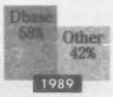
Continued on page 6

Esber's legacy
An inability to get Dbase IV out the door is eroding Ashton-Tate's domination of the PC database market and is the main challenge for Esber's replacement, William P. Lyons

Edward M. Esber Jr.

William P. Lyons

Percent of U.S. sites using a PC DBMS
Base of: 4,000 sites

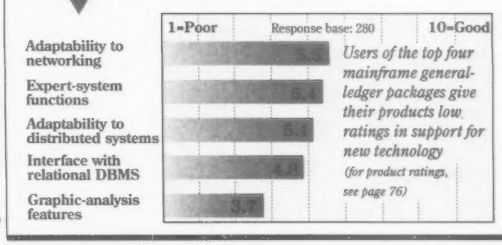


Source: Infocorp
CW Chart: Marie Haines

COMPUTERWORLD BUYERS' SCORECARD

Inside

Low Grades



Users of the top four mainframe general-ledger packages give their products low ratings in support for new technology
(for product ratings, see page 76)

Sun to lower stakes with Sparc entry

BY JAMES DALY
CW STAFF

Sun Microsystems, Inc. will begin one of the most important offensive moves of its young career next week when it unveils a low-end workstation designed to foil entrenched competitors that have been underpricing Sun and wooing away entry-level customers.

Sun is expected to announce a bare-bones model of its flagship Sparcstation 1 next Tuesday that will be based on its Scalable Processor Architecture reduced instruction set computing microprocessor design. Industry sources said they expect the machine to be priced around $5,000, with some guessing at a price as low as $4,000.

With added memory and software, the new Sparcstation would cost several thousand dollars more, but analysts said the perception of being a low-cost supplier is vital to the firm — especially in luring personal computer users who are considering trading up to a workstation.

Continued on page 8

Western Union: 'Send money — fast'

BY ALAN J. RYAN
CW STAFF

UPPER SADDLE RIVER, N.J. — *What hath God wrought!* That simple message, transmitted over 40 miles of wire by Samuel Morse 145 years ago, kicked off the age of telecommunications and eventually led to the formation of Western Union Corp.

However, God has little to do with corporate finances. The message hitting the wires today is more likely to be, "What hath Drexel Burnham Lambert wrought!" as 138-year-old messaging pioneer Western Union faces a crushing $51 million interest payment on junk bonds that could push the company into bankruptcy protection next month.

For its part, Western Union said it is not at the end of the line, although its noteholders will likely have the final say.

The two businesses that make up Western Union — Business Services and Financial Services — are profitable from an operational standpoint. "We are not going to file Chapter 11. We have money to make the payments," said Steven Graham, vice-president of marketing for Business Services at Western Union.

Geoffrey Johnson, an analyst at Argus Research Corp., said he is not as optimistic as Graham is that the company can meet that interest payment.

The Business Services unit, which provides electronic mail, electronic data interchange services and Priority Mail Services, reported revenue of $302.8

Continued on page 111

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IN THIS ISSUE

NEWS

4 LAN ho! Apple and DEC steam into port with new Mac-to-VAX software.

4 Oracle revenue falls short of predicted growth pattern.

6 The Iron Curtain rises on new players at Comdex Europe.

7 A Corvus creditor swipes at the firm's soft underbelly in Chapter 11 court.

8 New tools from Andersen will add strength to its Foundation.

10 Cincom stretches for recognition among its giant mainframe database neighbors.

12 Next goes Hollywood with a major sale to the William Morris talent agency.

16 A wave of sentencing for convicted computer hackers.

111 Manufacturers Hanover unleashes an expert system that scours foreign-exchange deals for fraud.

112 Sterling prospects: Sterling Software lines up behind SMS with a gaggle of data-management modules.

113 Green Akers: The financial grass looks pretty healthy for the coming year, according to IBM's chairman.

Quotable

"Esber was running a company that sells software as though it was coming out of a plastic injection molding machine."

DAVID MILLER
WORDTECH, INC.

On Ashton-Tate CEO Ed Esber's resignation. See story page 1.

SYSTEMS & SOFTWARE

31 NASA study finds that the best thing about Ada is its reusability.

PCs & WORKSTATIONS

47 Over the years, the OS/2 piper has slowed his tune.

49 Pacific Stock Exchange finds that Microman, an IS planning software package, reaps a major customer-service harvest.

NETWORKING

53 Private drive: Public network tools are letting clients direct their own traffic.

MANAGER'S JOURNAL

61 No pans for Williams-Sonoma's IS department, where strategic growth plans are the order of the day.

COMPUTER INDUSTRY

87 The junk-bond demise lights up high-tech eyes.

PRODUCT SPOTLIGHT

67 The heart of any business is its numbers, and users are looking for accounting systems that can keep their pace.

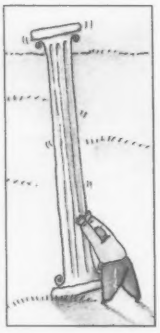
IN DEPTH

81 How to pep up MVS in less than three hours. By David Kirk.

DEPARTMENTS

6, 112 News Shorts
25 Advanced Technology
26 Editorial
62 Calendar
66 Book Review
96 Computer Careers
104 Marketplace
109 Training
110 Stocks
114 Trends

Pity your poor network manager. While you are aligning the goals of IS with those of the company, he's trying to decipher the seminar offerings at the symposia he attends. Consider these nuggets from the brochure of an upcoming confab: "Can you ignore CMIP? How long can you live with SNMP? [Can you live without it?] How do TCP/IP and OSI interface to SNA? Frame relay, cell relay, 802.6, DQDB, ATM and more! Basic ASN.1 data encoding. MIB variables. MIB enhancements. Bridges. Routers. Fridges [we kid you not]. A day in the life of a network manager." Doubtless, this last selection includes two Bufferin.



People are shaking up their accounting foundations to get business needs met. Page 67.

Ed Kashi

There's a lot cooking at Williams-Sonoma, where IS chief Richard Dykes is merging disparate systems and upgrading point-of-sale technology. Page 61.

EXECUTIVE BRIEFING

■ **Manufacturers Hanover's foreign-exchange fraud-detecting system** highlighted a slew of innovative expert systems described at a Washington, D.C., artificial intelligence conference. Dubbed Inspector, the system consolidates expertise from senior traders and auditors into 75 generic rules and applies them to all of the bank's foreign-exchange transactions. Other expert systems unveiled were Reuters' program for indexing news stories, a network diagnostics system at SWIFT international banking network and an IRS laptop-based program for field audits of pension funds. **Page 111.**

■ **Sun will dramatically lower the entry fee** for its workstations with next week's introduction of a Sparcstation, priced from $4,000 to $5,000. The move will further blur the PC/workstation line and may give Sun its much-needed entry into the retail distribution channel. Foreign vendors such as Toshiba and Goldstar are reported to have similar plans for low-cost, Sparc-based workstations. **Page 1.**

■ **IBM Chairman John Akers** predicted a better financial year ahead for Big Blue at the company's annual meeting. Support has grown modestly but steadily in the past three years for an annual shareholder resolution to stop IBM sales in South Africa, and some IBM employees now champion the cause. Separately, IBM introduced a PS/2-based airline industry system, moving a step closer to a standard platform for applications within a single industry. **See stories page 113.**

■ **Macintoshes and mainframes** may soon be heading to the Eastern Bloc in the wake of a White House proposal last week to ease export restrictions. The proposal awaits approval from Cocom, which is expected. **Page 4.**

■ **Ashton-Tate customers are not particularly worried** about President Ed Esber's resignation. They are more concerned with the firm's inability to get long-awaited products out the door. **Page 1.**

■ **The collapse of the junk-bond market** may mean more venture capital for computer industry start-ups. It may also free growing companies from the threat of hostile takeovers, many of which were funded by junk bonds. **Page 87.**

■ **Recent surveys find that British IS managers** wrestle with most of the same challenges as their American counterparts. Some problems, such as high turnover and shortages of qualified employees, may even be worse. **Page 61.**

■ **On-site this week:** "Electronic tagging" keeps track of cargo at Seattle's American President Lines. The shipping yard performs more accurate and faster tracking with the radio wave-emitting tags, which transmit data via T1 lines to DEC workstations and an IBM mainframe. **Page 54.** Fiber will be an integral part of the curriculum at Cleveland's Case Western Reserve University. Case is installing a Sonet backbone network on fiber-optic cable that will enable students to access voice, data, image and video on PCs in their dormitory rooms. **Page 53.** Handheld computers and bar-code scanners help keep food on the shelves for Burris Retail Food Systems. The Milford, Del.-based distributor to supermarkets uses an NCR host minicomputer and has big future plans for electronic data interchange links between the host and its warehouses. **Page 35.** The Pacific Stock Exchange's information systems department is bullish on Microman, a personal computer-based project management software package from POC-IT Management Services. IS director John Parady particularly likes the product for personnel scheduling and tracking code development. **Page 49.**

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Mac-to-VAX fruit on the vine

BY ELISABETH HORWITT
CW STAFF

NEW YORK — Digital Equipment Corp. and Apple Computer, Inc. last week put a $295 price tag on what they claimed was a full-function Macintosh-to-VAX client/server software product, with further integration to come.

DEC Lanworks is said to allow Macintosh users to remain within the Mac's familiar icon-and-mouse environment, while accessing a variety of VAX/VMS services, including SQL-based data sharing, CCITT X.400-compliant electronic mail exchange, printer services and multiple sessions in both Xmac and X Window System partitions.

The 2-year-old DEC-Apple alliance, along with third-party Mac-to-VAX connections, have helped Macs invade VAX installations in growing numbers, said Dan Ness, a personal computer industry analyst at Computer Intelligence (see chart).

Hartford Life Insurance Co. in Simsbury, Conn., is currently evaluating how to integrate numerous stand-alone Macintoshes at various remote sites with some 40 VAXs, according to David H. Annis, assistant vice-president of group administrative systems. Lanworks "seems to provide most of the features we want" for applications such as providing VAX-based file servers for Macintoshes doing desktop publishing, Annis said.

NAS architecture extends

Lanworks also strengthens the VAX's viability as a local-area network server by extending the Network Applications Support (NAS) architecture to support Macintosh clients, along with Microsoft Corp. MS-DOS and OS/2 systems, Annis indicated.

"The combination of NAS and Decnet" makes Microvax/VMS a stronger candidate at Canada's Imperial Bank of Commerce, which is currently looking at DEC's system, IBM's OS/2 and Unix as its server architecture of choice, according to Charley Pitcher, director of special projects.

The bank is less interested in the VAX-Mac connection, however, since it recently purchased 20,000 MS-DOS-based PCs, Pitcher added.

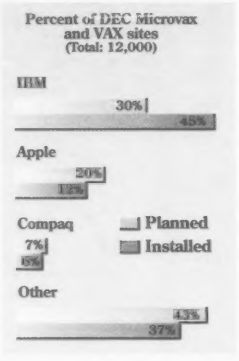
Lanworks offers a deeper level of integration than do existing third-party products, claimed Jacqueline Kahle, DEC's manager of NAS strategy and marketing. For example, the product is said not only to convert documents from DEC's Compound Document Architecture to Macintosh formats but also to integrate the two vendors' windowing environments, allowing users to cut and paste between a VAX document and a Mac document on the same screen.

Lanworks services are also said to support consistent application programming interfaces, so that an application written for one client system within NAS can be ported "with minimal code changes" to other NAS client systems, such as OS/2 and MS-DOS, Kahle said.

Lanworks allows VAXs and Macs to be physically linked in several configurations, including putting VAX/VMS servers on Apple's Appletalk and interconnecting Decnet and Appletalk via a gateway, DEC said.

Connections count

Apple's Macintosh has already carved out a respectable chunk of the PC market among VAX sites and seems poised for a greater presence



Source: Computer Intelligence
CW Chart: John York

Oracle concedes its eyes were bigger than profits

BY JEAN S. BOZMAN
CW STAFF

Oracle Systems Corp. lowered its sights last week, as Chief Executive Officer Larry Ellison conceded that the firm's own estimates for growth had been overly optimistic — both for the quarter ended May 31 and for fiscal 1991.

Speaking before a group of Wall Street analysts, Ellison said Oracle's goals for 100% annual revenue growth simply could not be met, even though the firm has been growing at that rate for the last 12 years. Oracle said it would grow revenue at a rate of 50% to 60% for fiscal 1991; Wall Street analysts, however, said a more realistic goal would be 25% to 30% growth.

Ellison actually revised Oracle's projections for fourth-quarter revenue upward, predicting it would range from $330 million to $355 million instead of $300 million to $320 million. However, according to one analyst, Ellison said earnings for the year have declined, falling from a projected $1.02 per share to 98 cents per share.

"The flavor of his remarks was confusing and contradictory," said Stephan McClellan, a first vice-president of research at Merrill Lynch & Co. in New York. "He actually revised the revenue expectations upward but said the earnings would be down," McClellan said.

David Bayer, an analyst at Montgomery Securities in San Francisco, was present at the New York meeting. "It's now clear that their expenses won't be as low as they've said," Bayer said. "Despite what Ellison said, we're still in a wait-and-see mode."

Quality, support problems

Bigger revenue does not necessarily spell bigger earnings for Oracle, said Peter Tierney, senior vice-president of Oracle's Product Division, in an interview with *Computerworld*. "When you're growing in excess of 50%, it's almost impossible to be cash-flow positive," he said.

Oracle has grown so big that quality-control and support problems have been cropping up with key customers he conceded. "We have to hire less bag-carrying salesmen and instead hire more consultants, support people and quality engineers."

User group officials informed about the meeting seemed pleased. "It sounds like they're being a lot more realistic," said Tony Ziemba, chairman of the New York Oracle Users Group. "Just hearing that they're starting to aim for 50% growth, instead of having a bunker mentality about the negative criticism, means they're realizing their market has changed, and they're adapting to it."

Looser export rules eyed

Bush proposes lifting PC, mainframe barriers

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — Amid European allies and Congress, the Bush administration last week proposed to ease controls on the export of computers, telecommunications equipment and machine tools to Eastern Europe and the Soviet Union.

The White House said it has proposed to lift barriers on the export of nearly all personal computers and certain mainframes targeted for banking, airline reservations and similar civilian applications.

The proposal must be approved by the Paris-based Coordinating Committee for Multilateral Export Controls (Cocom).

Industry reaction last week was muted but generally favorable. John L. Pickitt, president of the Computer and Business Equipment Manufacturers Association, called the president's proposal "a prudent step forward." He said the U.S. lags behind its allies in modernizing export-control policies and called for the administration to show flexibility in further easing controls when it negotiates with Cocom this summer.

Guy Palmer, import-export manager at Apple Computer, Inc., called the proposal "very helpful — a great improvement."

He said it would free for export all Macintosh computers, including the new Apple IIFX. He also said that Apple is evaluating Eastern Bloc countries on a case-by-case basis.

Proposed total decontrol

The administration proposed total decontrol of all computers with a processing data rate (PDR) of 275M bit/sec. or lower and called for "favorable licensing treatment to civilian users" of computers with PDRs up to 550M bit/sec. PDR is a measure used by the federal government that attempts to assess both floating-point and fixed-point processing power.

Late last week, the House Foreign Affairs Committee upstaged the administration by approving a bill that would relax all restrictions on the sale of computers rated up to the higher level of 550M bit/sec., the level at which U.S. companies may now ship computers to China.

CORRECTION

In this week's In Depth article, "A fast MVS Tune-up" on page 81, replace the second paragraph in the subheading entitled "OS/VS Cobol and Cobol II" with the following:

First, set the REGION parameter to 1500K. Second, adjust the SIZE and BUF parameters on the PARM statement to SIZE=1500K. For Cobol II, the command is SIZE(MAX). Then set BUF=250K for Cobol and BUF(32K) for Cobol II.

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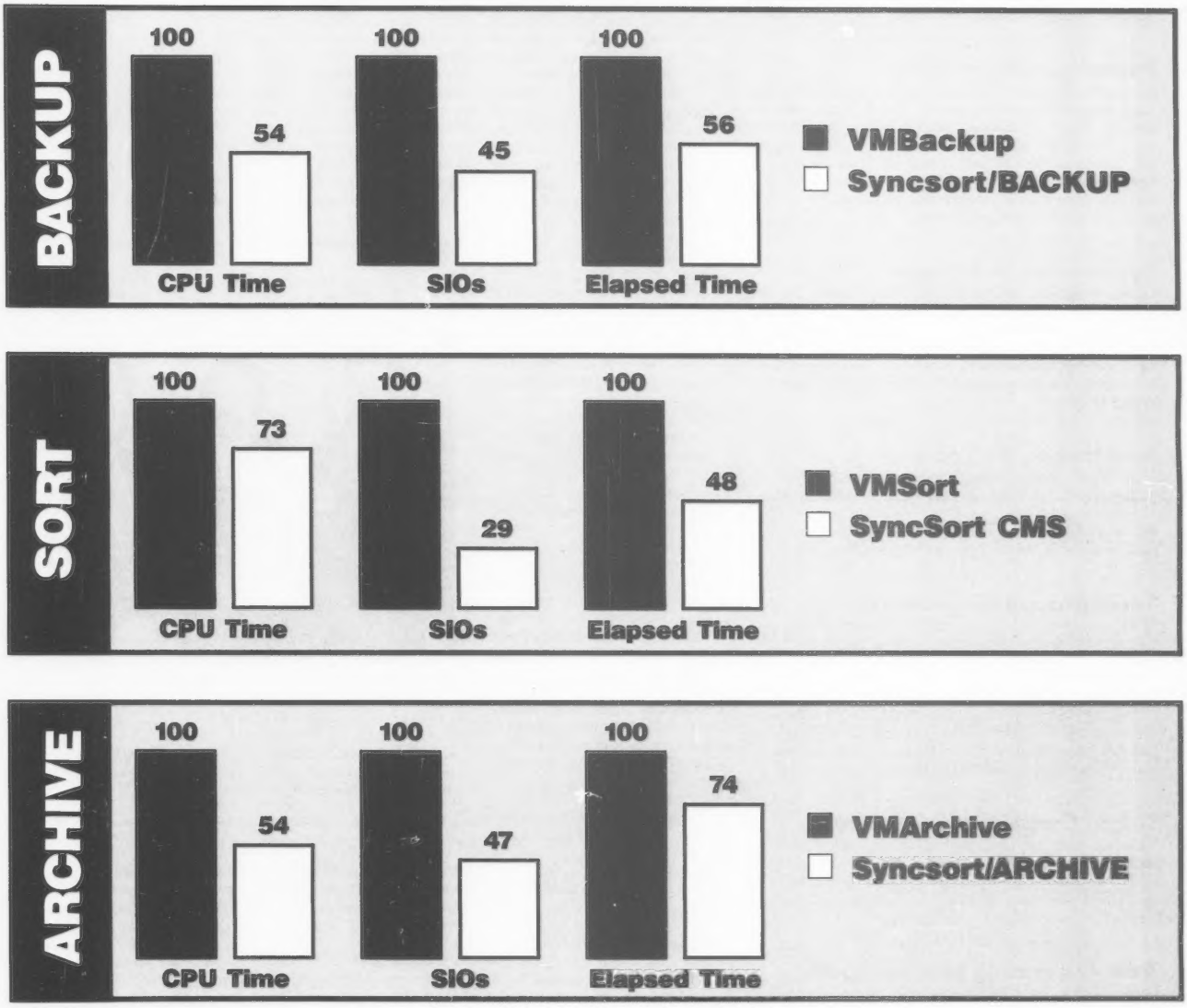

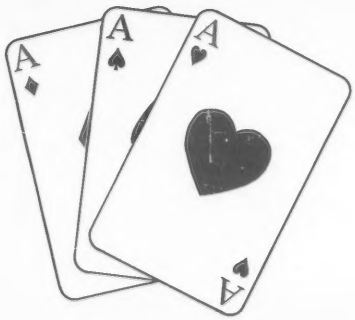

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NEWS SHORTS

HP to resell Wellfleet routers

In pursuit of one-stop-shopping status for enterprise networks, Hewlett-Packard Co. signed a nonexclusive OEM and technology agreement last week with Wellfleet Communications, Inc., a provider of internetworking products. The agreement will allow HP to resell Wellfleet's multiprotocol router line and have access to Wellfleet software technology.

Paperless pill process?

Streamlining the cumbersome task of documenting drug manufacturing processes is the aim of a "paperless manufacturing system" being announced at a pharmaceutical conference this week by Digital Equipment Corp. and Palette Systems, Inc. The Electronic Batch Records System (EBRS) links computer-integrated manufacturing with electronic document control and management, giving pharmaceutical manufacturers interactive on-line electronic batch records.

Systems house for sale

Canadian systems integrator SHL Systemhouse, Inc. announced that it is seeking a buyer for all of its outstanding shares. SHL, with about $170 million in revenue, is 50% owned by Kinburn Technology Corp., an Ottawa-based investor group. Public shareholders own 37.5%. SHL has reportedly retained investment bankers in New York and Toronto to look for a buyer.

Intel bumps I486 power

Intel Corp. continued to push the performance of its flagship I486 microprocessor last week with the announcement of a 33-MHz version. Intel officials said the chip can process 27 million instructions per second, making it approximately 32% faster than the 25-MHz version of the chip introduced last year.

Sparc group sets guideline

Sparc International — the independent Sunnyvale, Calif., quality-control organization for systems based on Sun Microsystems, Inc.'s Scalable Processor Architecture (Sparc) chip design — has announced its first yardstick for ensuring binary compatibility among Sparc Unix applications. Chairman Robert Duncan said Sparc Compliance Definition 1.0 represents the foundation of a Sparc branding program for ensuring compatibility across all Sparc system designs. He also said that the organization has joined the Unix International consortium.

Silicon Graphics shaves prices

Silicon Graphics, Inc. continued to lower the entry point for its line of visual processing workstations last week when it cut the price of its entry-level Personal Iris workstation from $13,500 to $10,000. The Mountain View, Calif., company also lowered the price of its low-end server to $5,900.

Troubled leasing firm units sold

Gemini Equities, Inc. and Finalco Group, Inc. announced that they will acquire all of the outstanding capital stock of the four European subsidiaries of CMI Corp. CMI, a wholly owned subsidiary of Continental Information Systems, Inc., filed for Chapter 11 bankruptcy protection in January 1989. The four European subsidiaries were not included in the bankruptcy. The Gemini/Finalco offer was approved last week by the U.S. Bankrupty Court for the Southern District of New York.

Storage Tek offers DASD

Storage Technology Corp. last week announced the expansion of its direct access storage devices (DASD) with the addition of a two-director 8900 cached DASD control unit and a half-string 8380R disk subsystem. The 8900 will reportedly be available in the third quarter of this year for $140,000. The half-8380R, priced from $142,750 to $196,125, is expected to be available in the second quarter of this year.

More news shorts on page 112

East Europeans want to deal

BY RICHARD PASTORE
CW STAFF

PARIS — Eastern Europe invaded France late last month, but the goal was contact, not conquest. Comdex Europe played host to Eastern Bloc citizens who came seeking business ventures, product information or, as one Romanian put it, "Whatever new is out there."

Eastern Bloc users, vendors and educators all agreed that the dramatic political changes of the past year will open up technological opportunities that were undreamed of a few years ago.

"We expect tremendous improvement in the country's level of automation," said Gheorghe Samoila, a senior engineer at the Institute for Computers (ITC), Romania's state-owned agency of computer technology. According to Samoila, under deposed dictator Nicolae Ceausescu, "there was no money to spend on computers and technology because he wanted to eliminate the national debt."

Samoila and his ITC colleagues came to Paris for information on personal computers, telecommunications and peripherals. For most, this was their first trip to a computer conference and trade show outside of Bucharest.

Some 50 to 60 people also made the pilgrimage to Paris from Yugoslavia. Among them were information systems managers from Elektra, the country's largest electricity utility. "We're looking to be informed about what's new in the world, especially in hardware, graphics and communications," said Damir Papandopulo, a telecommunications manager.

Currency had been a major stumbling block for Western import. But Yugoslavia now has hard currency it can exchange directly for Western products, Papandopulo said.

Currency is also solidifying in Czechoslovakia, according to Prokop Toman, a Czech university professor who came to the Comdex show in search of class materials and information on graphical and text-based PC interfaces. Yet, even though he expects greater freedom to buy Western products, Toman said he will not buy exclusively from abroad. "I want to use our own sources to help make our resources stronger," he explained.

Some Eastern Bloc nations are paving the way for the West, establishing new laws that allow greater levels of investment. Since March, Western firms can invest 51% or more in Czech companies, Toman said.

Rather than wait for the West to come to them, many Eastern Europeans are taking the initiative to establish joint ventures. Bojan and Nada Kosir, a couple who runs a small Yugoslav uninterruptible power supply (UPS) distributorship, came to Comdex seeking partnerships with Western UPS vendors. "We are trying to become their representative, perhaps for the whole Eastern Bloc," Nada Kosir said.

Fingers in the pie

Digital Equipment Corp. executive Henry Ancona (left) and IBM executive Robert F. Berland (right) showed up for Computer Associates Chairman Charles B. Wang's formal announcement of CA '90s last week. Although CA seeks to provide independent software products that can complement the software architectures of IBM and DEC, the rivals heralded the announcement as an example of industry cooperation.

Ashton-Tate

FROM PAGE 1

consulting firm that uses Dbase III+. "If not, it isn't going to matter who the president is."

Esber came under increasing pressure in recent weeks for his lack of interest in day-to-day operations as the company produced no concrete evidence that it was nearing a ship date for its Dbase IV Version 1.1 database server product.

The Dbase line has accounted for some 70% of the company's revenue, but quality and development problems crippled the product's sales and stalled growth for the last four quarters. The company lost $1 million in the last quarter.

Lyons denied speculation that Esber's resignation was a result of a lack of progress on the development of Version 1.1, saying that development was progressing and that the company had received strong response from beta-test sites.

No plans as yet

The company said there were no plans in place to name a CEO, and Lyons denied that his position was a holding pattern for the company. "The word interim is not before my title," Lyons said. "I am president and COO for the foreseeable future."

Carmelo J. Santoro, an outside director of Ashton-Tate and chairman and CEO of Silicon Systems, Inc., a Tuscan, Calif., semiconductor company, was named nonexecutive chairman of the board. Esber will remain a member of the board of directors, a move seen largely as a temporary position to give him time to assess other options outside the company.

Lyons does not bring an overwhelming reputation to the job. Moderate success in the applications division did not provide much short-term enthusiasm among analysts, who said that Ashton-Tate's problems will require a long-term change in focus. Ashton-Tate's stock price remained largely unchanged during the week.

Some who had worked with Esber were pointed in their criticism of his lack of interest in the often complex operations of a software company.

"Esber was running a company that sells software as though it was coming out of a plastic injection molding machine," said David Miller, president of Wordtech, Inc., an Orinda, Calif., supplier of a key component of Dbase IV SQL technology.

"It is mind-boggling that a $300 million company could be brought to its knees by his incompetence," he said.

Opening Windows to OS/2

Migration kit to help developers port to new system

BY PATRICIA KEEFE
CW STAFF

BOSTON — Microsoft Corp. last week committed to providing binary compatibility between Windows and OS/2 applications — but did not say when. It instead said it will take a first stab at assisting developers in porting Windows applications to OS/2 "in a matter of days."

Currently in beta testing, the Microsoft Windows to OS/2 Software Migration Kit features runtime translation code to allow converted Windows applications to look, feel and work like OS/2 Presentation Manager programs, Microsoft said.

Developers will be able to map Windows application programming interfaces (API) to equivalent OS/2 APIs, link libraries to Windows applications, run OS/2 Version 1.2 and higher and take advantage of some OS/2 features.

DOS and Windows device drivers cannot be converted by the software migration kit to run on OS/2. Windows applications that run such drivers must rely on OS/2-specific drivers to provide the same functionality.

Microsoft also promised to work to add the tool kit into OS/2 Version 2.0 so that off-the-shelf Windows applications can run on Presentation Manager. This will require adding a mapping layer to 2.0 to run Windows binaries out of the box.

Peter Neupert, senior general manager for OS/2, also went out of his way to try and clear up what he said was massive confusion about Windows, OS/2 and their relationship to each other.

Neupert said that Microsoft has never tied either Windows or OS/2 to a particular hardware platform. However, he was quickly reminded of comments made by Microsoft Chairman Bill Gates and Vice-President of Systems Software Steve Ballmer in October, when the two exhorted users buying Intel Corp. 80386-based boxes to migrate to OS/2.

Instead of focusing on hardware platforms or waiting for a "killer application," Neupert suggested that users consider the attributes engendered by OS/2 and Windows. Windows is ideal for those seeking a graphical user interface for DOS as either a network client or stand-alone entity, he said. Positioning OS/2 as a superset of Windows, he said the OS/2 environment provides security, multithreading, memory protection and added performance. These features should be considered by users seeking to run multiple or so-called mission-critical packages or by those who need a network server or want to act as peers on a network.

When pressed about when users could expect delivery of OS/2 Version 2.0, the 32-bit or 386 version of the operating system, Neupert, who last month conceded that the goal might not be met [CW, April 16], said last week that OS/2 Version 2.0 realistically will require a three- to six-month beta-testing period, which has not yet begun.

Corvus faces new problems in reorganization

BY JIM NASH
CW STAFF

SAN JOSE, Calif. — Corvus Systems, Inc. executives, now fighting for the firm's financial survival in bankruptcy court, must also battle for control of the firm itself.

Corvus filed a reorganization plan May 1, months before executives planned to issue the proposal. Spokeswoman Gloria Leonard said Corvus' hand was forced by a rival plan filed recently by Carl Berg, the company's single secured creditor.

Corvus filed for Chapter 11 protection in June 1988. Leonard said the firm has been slowly recovering since the filing.

Berg is a general partner at Berg & Berg Industrial Developers in Cupertino, Calif., and a former director of Corvus. Under Berg's plan, all equity investors in the networking firm would lose their stock without compensation. Berg, said Gregory Coplans, legal advisor for Corvus, would acquire 100% of all stock and would retain his firm's claim to the $3.2 million in debt Corvus owes it. A lump sum of $700,000 would be paid to all unsecured creditors. Berg could not be reached for comment.

Corvus proposed to impose a 1-for-10 reverse stock split to equity holders. It also suggested paying unsecured creditors 10% of their allowed claims from the firm's cash on hand, Coplans said, and another sum equaling an additional 10% of their claims within one year.

In addition to that amount, creditors could decide either to accept one share of stock for every $10 of their claims or participate in a fund that could receive money from future unspecified sales of company assets, Coplans said.

Under the Corvus proposal, Berg & Berg would receive full repayment over seven years, backed by promissory notes collateralized by assets.

Leonard said Corvus, the unsecured creditors and investors have filed objections to Berg's plan.

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Andersen spreads Foundation

BY AMY CORTESE
CW STAFF

NEW YORK — Andersen Consulting unveiled software development tools last week aimed at bolstering its fledgling software business.

The information consulting company announced nine additions to Foundation, its flagship computer-aided software engineering (CASE) environment, including support for OS/2, Digital Equipment Corp. and Bull H. N. Information Systems, Inc. platforms.

The company also disclosed its product plans for Unix tools, configuration management software and products that incorporate artificial intelligence.

The Foundation tools were designed to create applications that run across multiple platforms yet at the same time exploit the particular hardware platforms they run on, according to the company.

In the IBM environment, Andersen said it will support IBM's AD/Cycle scheme when that is "fully functional." Similarly, the DEC products use DEC's database, repository and Vaxset development tools.

Andersen made its entrance into the CASE software market two years ago with the commercial introduction of Foundation. While software product sales today represent a minute portion of the company's estimated $1.8 billion in worldwide revenue, Andersen expects to see significant growth.

Mike Hudson, managing partner in charge of product planning and strategy for Foundation, projects that software sales, estimated at $40 million to $50 million this year, will grow by 60% next year.

Positive outlook

"I think Andersen is heading in the right direction," said Dale Connor, director of programming at Kansas Power & Light Gas Service in Topeka, Kan. The utility uses several IBM-based Foundation modules, including Method/1, Manage/1, Design/1 and Install/1.

Connor added that he is seeing a 140% productivity gain in program design for an all-new customer system that is currently being built with the tools.

The following additions to the Foundation family were announced last week:

- An OS/2 Presentation Manager version of Foundation that will support client/server implementations.

The first release of Foundation for Cooperative Processing, which is scheduled to be released to beta-test sites this spring and slated for general availability late this year, will support OS/2, OS/2 LAN Server and MVS/CICS servers.

- A new version of the Install/1 testing and implementation tool for Bull GCOS 7 and GCOS 8, VAX/VMS and IBM IMS/DC environments. Additionally, a version of Install/1 was introduced to support development of batch programs.
- A version of Design/1, an analysis and design tool, for OS/2. A shared repository allows OS/2 developers to share information with developers using the existing Design/1 for MS-DOS.
- Plan/1 for OS/2, a LAN-based tool for information planning.
- Method/1, a LAN-based automated systems development methodology and project management tool set for DOS workstations.
- Two new software development packages, Work/1 and Invest/1, tailored for the utilities industry and institutional investors.

Prices range from $35,000 to $275,000, depending on product and platform.

According to Andersen, all products announced, with the exception of Foundation for Cooperative Processing, are available immediately.

Sun

FROM PAGE 1

"The entry-level price is very important; it's the first thing people see," said David Wu, an analyst at the New York office of S. G. Warburg & Co.

Analysts said the introduction could become a key in gaining Sun shelf space at retail computer stores. "In order to grow its market, Sun needs to overlap the PC channel much more than they do now," said Martin Ressinger, an analyst at Chicago-based Duff & Phelps, Inc. "That's where the volume is."

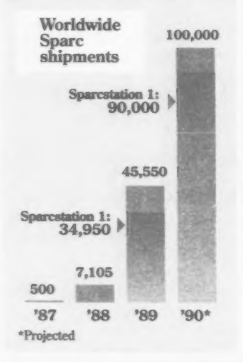
Sun President Scott McNealy indicated that the firm may broaden its distribution strategy through retail outlets, but so far, they have balked at making the move.

Observers said that the move is key for the company. While researcher Dataquest, Inc. ranks Sun as the workstation market leader, its continued dominance in the $6.1 billion workstation field is far from certain.

Competitors have gone after the $8,995 base price of the Sparcstation 1 since its introduction in April 1989. Hewlett-Packard Co., for example, delivered its $3,990 Series 2500 workstation last September, and Digital Equipment Corp. sells its Decstation 2100 RISC-based workstation for $5,950. These pressures reportedly went a long way toward stepping up the roll-out of the upcoming model.

Insiders said that Sun officials have left no stone unturned in devising schemes to lower the end price of the new model. "Sun has been constantly beating us up to reduce pricing," said an electronics supplier who provides components for Sun.

All for 1. . .
The Sparcstation1 has been the high-volume product in Sun's Sparc line



Source: International Data Corp.
CW Chart: John York

Competitive Sparcs

Toshiba Corp., Datatech Enterprises and Goldstar Technology, Inc. are also expected soon to announce Sparc-based machines for under $5,000, accentuating the need for Sun to go after the entry-level market.

The rollout is the first of what could be a busy summer for the firm. Sun researchers are also reportedly readying a high-end machine capable of processing 22 million instructions per second (MIPS). Only two weeks ago, Sun unveiled the Sparcstation 1+, which delivers 20% more processing power than the earlier version.

Sun's upcoming high-end model will reportedly have a beefed-up version of the Sparc chip that now powers the Sparcstation 1. Both Texas Instruments, Inc. and Cypress Semiconductor Corp. are preparing Sparc chips with potential performance levels above 50 MIPS.

NEC's next notebook PC to dump memory card

BY RICHARD PASTORE
CW STAFF

NEC Technologies, Inc., a pioneer in the notebook computer market, has watched its once-innovative Ultralite fall prey to such leapfrogging rivals as Compaq Computer Corp. and Toshiba America Information Systems, Inc. This summer, NEC will pounce back with its first notebook personal computer using industry-standard storage.

According to sources briefed by the company, NEC will unveil a 6-pound notebook PC featuring 20M- or 40M-byte hard disk drives rather than the 1M- or 2M-byte silicon hard disks of the Ultralite.

The model, which will probably debut at Comdex/Spring '90 in Atlanta next month, will also eschew the Ultralite's 2-in. read-only memory card. Instead, the base price will include an external 3½-in. floppy disk drive, sources said. NEC officials declined to confirm the information.

The odds are

Observers speculated that the machine will be based on the Intel Corp. 80386SX microprocessor. "I suspect they'll go with the SX because this is the second-generation notebook for NEC," explained Richard Horan, editor of *Portable Technology Update.*

Also, NEC cannot afford to fall short of Compaq, which is rumored to be brewing its own 386-based notebook computer, Horan said.

Based on the competition's prices, the NEC machine should cost from $4,000 to $5,000, Horan added.

Probably the machine's most significant new element will be based on IBM Video Graphics Array (VGA) screen technology. So far, only Sharp Electronics Corp. has announced a VGA notebook machine, industry sources said.

"I've been waiting for a mainline vendor like NEC to come out with VGA," said an information systems executive at a major U.S. bank. "We're a Windows shop, and if you can't run VGA, you've got a real problem."

The Sharp machine is handicapped by Sharp's image as a calculator and electronic gadget vendor, the IS executive added. "They don't have the support or technical service standpoint that would cause me to buy," he said.

The NEC unit will be powered by two batteries that will run out of juice one after the other rather than in tandem. "That way, you can take one out and recharge it while the other is still going," said one source who experimented with a prototype unit.

Like NEC's Prospeed 386 portable, the notebook will feature an expansion chassis that sits on the desktop. By snapping the unit into the chassis, the user can obtain additional full-size ports for networking and peripheral attachment, as well as additional storage capacity.

NEC's product wheels may be starting to roll none too soon. According to Storeboard, Inc. in Dallas, Ultralite sales are running out of gas. Monthly sales through U.S. computer retailers fell from 631 in November 1989 to 221 in February. During the same period, Compaq LTE monthly sales climbed from 795 to 1,197.

Lotus ready to make a 1-2-3 Impress-ion

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — Sparked perhaps by a drop in 1-2-3 Version 3.0 sales over the last quarter, Lotus Development Corp. is expected to fill a glaring hole in 3.0's functionality by announcing windowing and publishing capabilities today.

What users will get, according to David Bayer, an analyst at Montgomery Securities in San Francisco, is both a significant ability to use a graphical user interface, and what-you-see-is-what-you-get control over spreadsheet output.

The new version of 3.0 will snub Lotus' Allways publishing technology, licensed from Funk Software, for competitive software from PC Publishing called Impress. Allways is used to provide publishing capabilities within 1-2-3 Versions 2.0 and 2.2.

According to Jack McGrath, a Hingham, Mass.-based publisher of a 1-2-3 newsletter, Impress provides mouse support, hot graphics, direct access to the Lotus menu and a pop-up window where users can watch numbers change in real time.

Unlike Impress, Allways lacks a windowing facility and forces users to exit a worksheet to print, said Barbara Isgur, an analyst at Needham & Co.

Today's announcement is slated to be made simultaneously in New York and Paris. Isgur explained that 1-2-3 "has lost a lot of ground" in Europe to Borland International's Quattro Pro.

Meanwhile, Lotus recently told analysts that Version 3.0 has slipped from 33% of 1-2-3 revenue to 25% in the last quarter.

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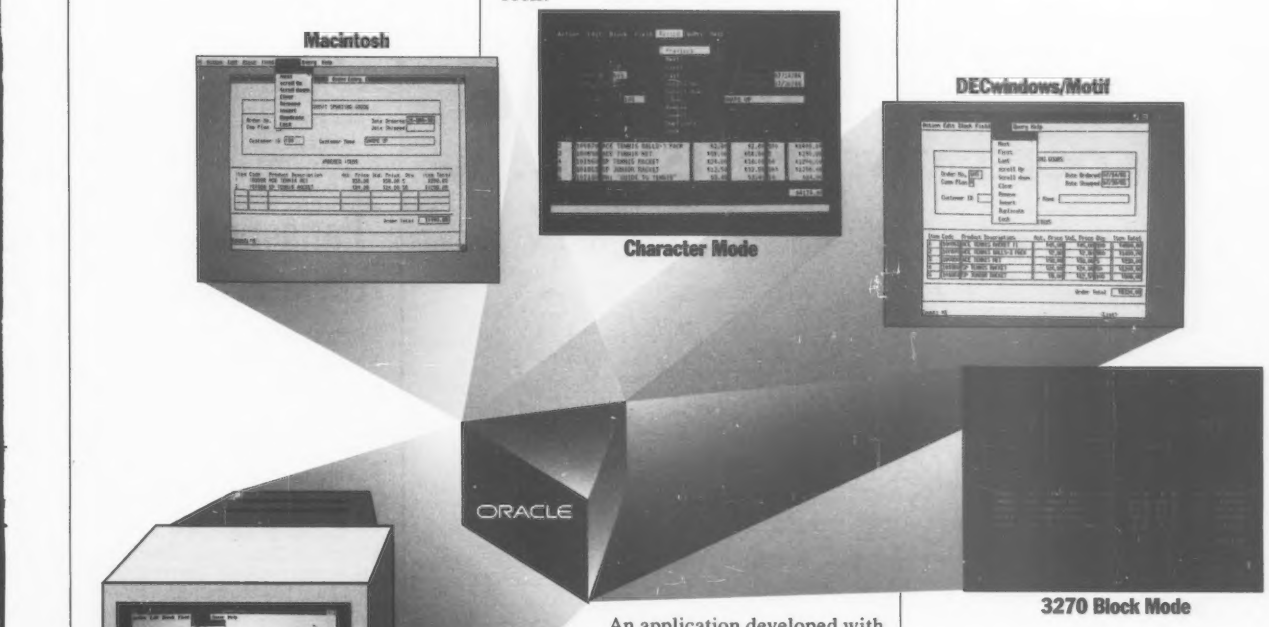

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Cincom takes familiar tack in expansion strategy

BY ROSEMARY HAMILTON
CW STAFF

With the mainframe database market focus now on two giants, IBM and Computer Associates International, Inc., a company like Cincom Systems, Inc. can get lost in the shuffle. Or worse.

Cincom is apparently acknowledging that a new strategy would call for moving its database to several smaller systems, including Unix platforms and IBM Personal Computers, and delivering distributed databases within the next two years.

The good news is that Cincom appears to have a loyal customer base. The bad news is that the strategy is hardly new, so it has competition hiding behind every door. Some speculated Cincom would find limited growth with a me-too plan.

"They'll have to carve out niches for themselves," said Colin White, president of Database Associates in Morgan Hill, Calif. "The question is, will it be big enough for them to survive?"

Some customers think so. At Mastercard International, Inc., which is running Cincom's Supra relational database management system on an IBM mainframe, Cincom's new plan got a thumbs-up from Warren Crawford, manager of database services. "Having been around Cincom products for several years, I know that there is a good, strong technical base for why they do what they do," he said.

The company will begin delivering Supra on several Unix platforms this year, said Thomas McLean, vice-president of Cincom's Systems Software Division. The schedule calls for availability of Supra versions on Sun Microsystems, Inc., Digital Equipment Corp. Ultrix and Sequent Computer Systems, Inc. environments by the fourth quarter. Both OS/2 and DOS versions are scheduled for a year-end release.

Further, the company said it intends to deliver a Supra version for the IBM AIX environment, although it would not commit to a shipment date. Pieces of a distributed database strategy will begin rolling out by year's end as well.

Cincom said these plans came together as part of its effort to refocus the company back on databases. The first phase was the recent sale of its successful Netmaster product to Systems Center, Inc.

However, these new plans are costly efforts for a small company with slow growth, said Paul Hessinger, vice-president of research and development at Computer Task Group, Inc.

"I'm not privy to their financials, but I interpret the sale of Netmaster as a damaging one," Hessinger said. "To have sold off the one product in the IBM world that everyone agreed was superior to what everyone else offers — there must be some financial pressure."

As a privately held concern, Cincom does not release profit figures. Revenue in 1989 was $168 million, a small boost from $161 million in the previous year.

"It wasn't like the year before, but we grew — and we survived," McLean said.

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Pansophic draws class-action suit

BY ELLIS BOOKER
CW STAFF

LISLE, Ill. — Two days after announcing the write-off or restructuring of some of its business operations and a onetime charge expected to eliminate its fiscal 1990 earnings last month, Pansophic Systems, Inc. was slapped with a securities class-action suit.

The suit, filed April 25 in the Northern District of Illinois Federal District Court by Arizona resident Rodney B. Shields, alleges that between the period of April 30 last year and April 23 this year, Pansophic made public statements that were false and misleading, according to Clifford T. Rones, an attorney at Greenfield & Schimicles, the Haverford, Pa., law firm representing Shields.

"Essentially, you have a company saying, 'We are very profitable,' for a nine-month period, and shortly before the annual results come out, it says it's not going to show a profit," Rones said.

A Pansophic spokeswoman said last week that the company's management believes the suit is without merit and that Pansophic behaved in conformance with Securities and Exchange Commission rules and regulations.

Late last month, Pansophic said it was closing its Brazilian subsidiary because of the economic reform measures and monetary restrictions imposed by the Brazilian government in March. Pansophic also said it was consolidating its systems software businesses, composed of an application and development control product group and an information retrieval product group. The new unit will be known as the Systems Software Division.

Pansophic also said it was taking a write-down on some unspecified parts of its graphics business. In recent years, the company has moved into prepress and multimedia graphics products.

Pansophic's fiscal 1989 operating revenue was $190.3 million, an increase of 15% over 1988, with profit up 9% to $26.5 million.

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Software 2000 paused to catch up with users

BY MARYFRAN JOHNSON
CW STAFF

ORLANDO, Fla. — One year ago, Software 2000 faced a group of users so frustrated with buggy software and poor services that the IBM midrange software vendor deferred all new product releases and concentrated on improving quality and support.

Last week, the Hyannis, Mass.-based vendor opened its annual user convention and claimed to have done just that, rolling out a much-desired application integration tool called Application Manager 2000. "AM2000 is a biggie for us. It replaces Domain as the platform that all applications rest on, and it's supposed to be as easy as pushing a button," said Tony Donahoe, chairman of the user group.

Domain is the predecessor of AM2000, but its user interface functions were extremely limited. Also, AM2000 will comply with IBM's Systems Applications Architecture standards, while Domain did not.

"Overall, I'd say people seem a lot happier this year," Donahoe said. "There's a lot less hostility and frustration."

During the past year, the company also bowed to user demands by producing a detailed "discrepancy list" of 119 software bugs, with instructions on how to fix them or work around them.

Software 2000, which specializes in human resources, financial and environmental management software for IBM System/38 and Application System/400 computers, also announced its Vital Signs 2000 personal computer-based executive information system last week. The product, scheduled for availability next month, is the first in a line of cooperative processing systems for monitoring key aspects of a business.

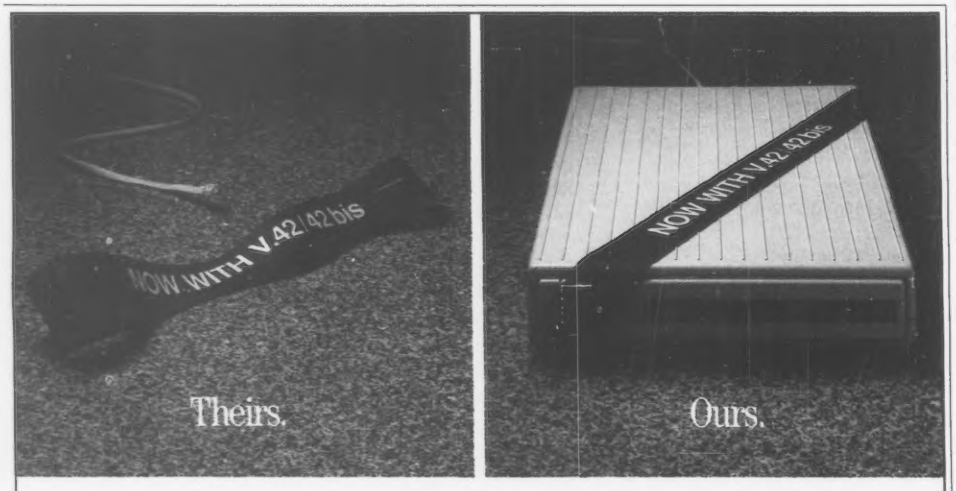
Yet AM2000 — priced from $25,000 to $75,000 — was clearly the most welcome news for users, who have to wade through tedious sign-on procedures each time they switch from one Software 2000 application to another.

"We are very interested in AM2000," said John Fuqua, manager of financial reporting at Rent A Center, Inc. in Witchita, Kan. "We have several of their systems and would like to hook them into a centralized menu."

"If anybody can work that out, it will be Software 2000," said Demo Tsagarakis, director of information systems at The Alpha Corp. in Collierville, Tenn. "Everyone has had to develop his own way of navigating through the various applications."

Now in the process of diversifying from the manufacture of resins to base materials used in circuit board design, Alpha had planned to add another six AS/400s to the two AS/400s currently managing its administration and finances. But the year-long wait for a promised integration product to link manufacturing software from Marcam Corp. with administrative applications from Software 2000 convinced Tsagarakis to buy six VAXs instead.

Software 2000 executives blamed the delay in the promised integration on logistical and technical problems but would not say when they would be resolved.



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Next lands major workstation pact

BY JAMES DALY
CW STAFF

LOS ANGELES — Flamboyant personal computer industry pioneer Steve Jobs has reconfirmed what he knew all along: There's no business like show business.

Jobs' flashy start-up, Next, Inc., will unveil its first major corporate sale this week when it announces a contract to supply 250 workstations to the William Morris Agency, Inc., which claims to be the world's largest and oldest talent firm.

The $2.5 million deal represents a key milestone for Next, which has struggled for large contracts outside of the university circuit since its unique black cube workstation was introduced amid hoopla in October 1988.

Jobs, who co-founded Apple Computer, Inc. and is currently president of Next, initially claimed that Next would quickly become a major player. But Next's operating system was delayed, causing a lapse in development of broad-based applications for the new model. A distribution deal with computer retailer Businessland, Inc. was expected to generate sales of $100 million by year's end but reportedly has fallen far short. Next insiders said sales average only about 500 systems per month.

However, the situation could be changing. The deal with William Morris is expected to lead to a series of similar contract announcements over the next few months, Next officials said.

William Morris already has 80 of the $10,000 machines in its Beverly Hills and New York offices, said Lee Gruenfeld, a partner in the Los Angeles management consulting office of Deloitte & Touche, which helped engineer the deal.

The machines will sit at the desks of agents who will run a customized program designed to keep track of clients.

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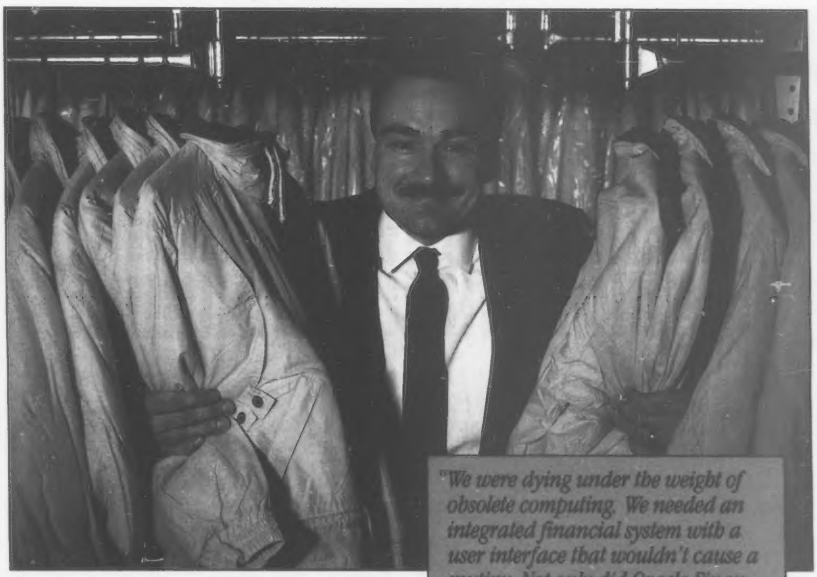

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Bob LaPenta, Controller and Chief Accounting Officer, Burlington Coat Factory

With over 150 stores around the country, Burlington Coat's biggest sales job was internal. Even though they had an impossible-to-maintain, home-grown accounts payable, expenses and general ledger system, their employees knew how to use it. They knew the work-arounds and the pitfalls. They also knew the 1989 buying season would be a nightmare. So they were willing to give the Oracle Financials™ family of products a close look.

The intuitive screens impressed them immediately, because Oracle Payables had a familiar feel. But they were literally rescued by the ability to modify vendor information on the fly. For example, their suppliers may have financed production with multiple lenders, or factors, who needed to be paid directly. Burlington's old system made this a continuous but necessary nightmare of overtime, workarounds and manual entries. Oracle Payables completely eliminated this headache.

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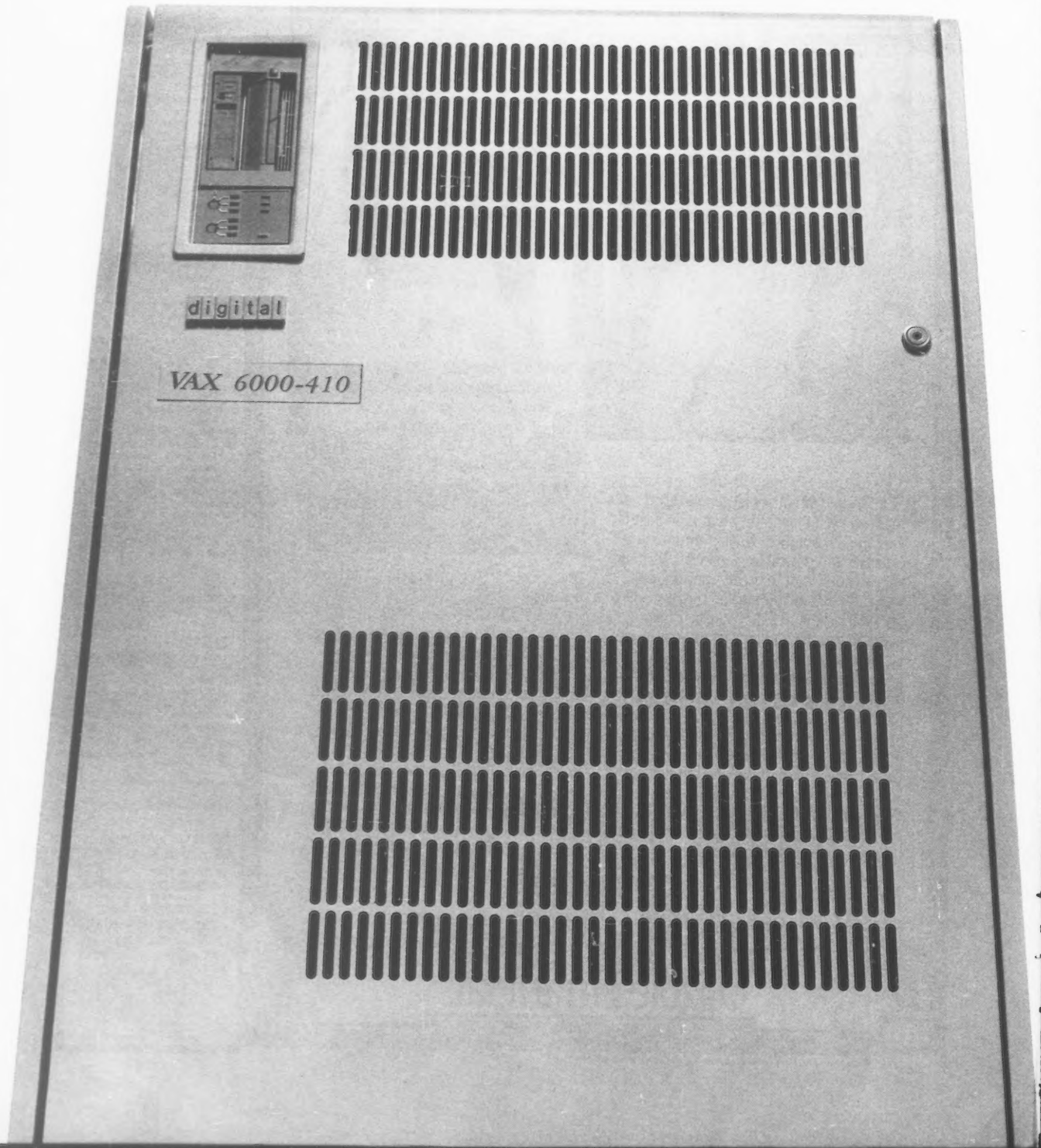

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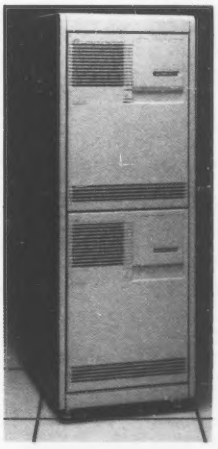

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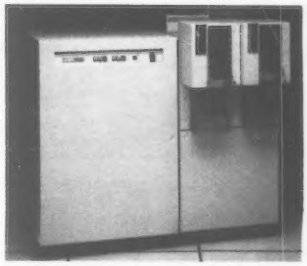

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Two hackers found guilty in voice-mail crime schemes

BY MICHAEL ALEXANDER
CW STAFF

CHICAGO — The ringleader of a nationwide gang of some 152 computer hackers pleaded guilty last week in what U.S. Justice Department officials said is the first successful voice-mail prosecution by federal authorities.

Also last week, a Pima County, Ariz., state superior court judge doled out an unusual punishment in sentencing a 24-year-old "finger hacker" found guilty of stealing and using telephone access codes and voice-mail services.

Leslie Lynne Doucette, who operated under the handle of Kyrie, admitted that between January 1988 and May 1989 she was part of a scheme to steal long-distance telephone and voice-mail access codes and credit-card numbers, which she used to purchase Western Union money orders. When she was arrested in Chicago last year, law enforcement officials said she had 481 illegally obtained access codes and credit card numbers in her possession [CW, June 5, 1989].

Doucette, 36, also stole computer and voice-mail passwords and illegally used corporate voice-mail systems to exchange the stolen codes and credit-card numbers with other gang members, federal prosecutors said. The gang rang up more than $1.6 million in telephone access and voice-mail charges and fraudulent credit-card bills.

Doucette will be sentenced July 31. "We will recommend sentencing within guidelines, probably about a three-year sentence," said William Cook, assistant U.S. attorney in Chicago. The year Doucette has already spent in jail will be credited to her under the sentence, Cook said. Other arrests are likely.

In the Arizona case, a judge sentenced David Sloan Taylor, who used the moniker "L.A. Hacker," to three years probation with special conditions, among other penalties.

In addition to the usual conditions of probation, said Gail Thackery, assistant attorney general for the state of Arizona, "Taylor is not allowed to have an unlisted telephone number, not allowed to subscribe to a voice-mail system, and because he told the court that he is taking computer classes and wants to work with computers, he may not use a computer modem except in legitimate, supervised employment."

Taylor was also sentenced to serve 20 days in jail and ordered to make $5,000 restitution to U.S. Sprint Communications Co., which he was accused of defrauding by stealing telephone access codes. The jail time is to be served in two-day blocks so as not to interfere with his employment as a disc jockey in a discotheque.

Taylor pleaded guilty to a felony under Arizona's computer fraud statute. He admitted that between Feb. 1, 1988, and May 10, 1988, he obtained access codes from a U.S. Sprint telephone switch using a programmable memory telephone, a technique called "finger hacking."

Agents confiscate fantasy handbook

BY MICHAEL ALEXANDER
CW STAFF

AUSTIN, Texas — Steve Jackson has spent the last 10 years making a business out of publishing handbooks for fantasy role-playing games, but for the last two months, reality has been stranger than fiction, he said.

On March 1, U.S. Secret Service agents apparently investigating hackers raided the office of Steve Jackson Games and the homes of an acquaintance of Jackson's and the firm's managing editor and confiscated computers, disks and other computer-related gear.

The targets of the raids were text files of *GURPS Cyberpunk* (GURPS is shorthand for Generic Universal Role Playing System), which law enforcers described as a "handbook for computer crime," Jackson said. *GURPS Cyberpunk* is a game book named after a genre of science fiction popular among computer hackers, according to Jackson.

"The game is about computers and describes the world of cyberpunk," Jackson said. "One of the objectives of the game is to crack computers," he conceded.

Law enforcement officials have said little about the investigation but denied that the book or Jackson's company were the objects of the raid. They said they are investigating Jackson's acquaintance and the employee who authored the book, both of whom have reputations as computer hackers.

William Cook, assistant U.S. attorney in Chicago and the federal government's point man in its computer crime crackdown, said he was unable to comment on an ongoing investigation. Jackson's complaint that authorities were mainly interested in the game book appears "motivated by a desire to sell books," Cook said.

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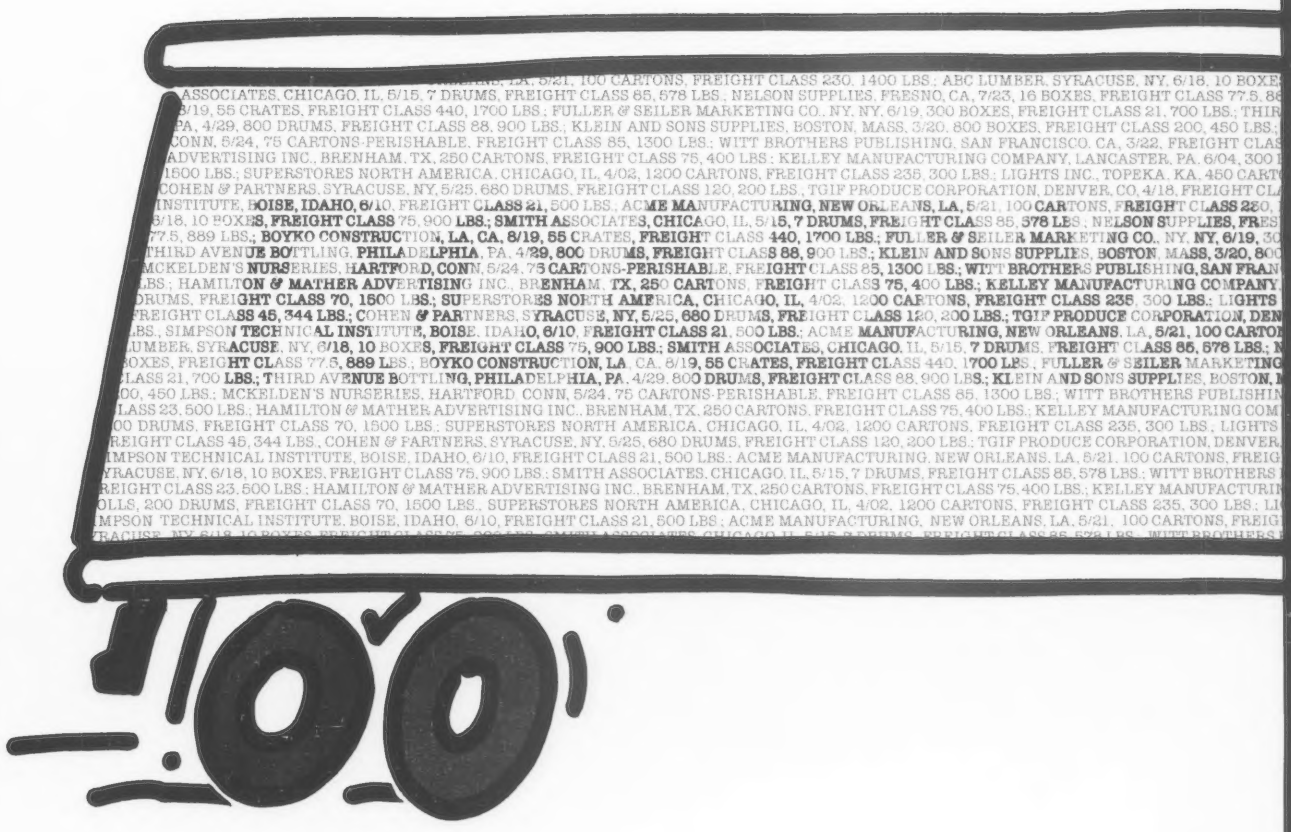

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Portrait of a planet: Database lifts clouds

BY SALLY CUSACK
CW STAFF

The human race has received its first-ever "unclouded" picture of the Earth, thanks to the combined efforts of an artist, a scientist and a graphics supercomputer workstation.

It began last March, when Thomas Van Sant, a Santa Monica, Calif.-based sculptor, and Van Warren, a scientist at Jet Propulsion Laboratories in Pasadena, Calif., accidently discovered that they shared the same vision: to create a cloudless, unobstructed global view of the planet for use by researchers and environmentalists.

Within the next few weeks, they will unveil the "Reality Globe" — a 7-ft fiberglass geosphere with satellite images projected over it to re-create real-life effects and events. "Our greatest challenge is to evolve from earth resource users into earth resource managers," Van Sant said

When Van Sant contacted the National Satellite Center in Washington, D.C., to gather archived photographic data last year, he learned of Warren, a systems designer who was creating a very large planetary database at the Jet Propulsion Labs. "He called me out of the blue one day, and that was it — instant fusion," Warren recalled. "He had the 'how' and I had the 'why' of what we had both been working on," he said.

The first step was to produce a cloudless portrait of the planet using satellite data. With a grant of $30,000 from the National Aeronautics and Space Administration and a Stardent Computer, Inc. 1000 supercomputer, the pair began to create a color version of the Earth to be viewed and manipulated by a user on the Stardent platform and used for projection onto the Reality Globe.

While Warren developed software that individually composites scenes from satellite photos and integrates them into a digital database, Van Sant provided the artistic criteria for selecting which photos should be included in the final pictures.

The mapping aspect of the project required rapid manipulation of massive amounts of pixel data, and the pair researched several workstations before choosing the Stardent machine because of its graphics manipulation capabilities. The Stardent 1000 incorporates the AT&T Unix System V/X Window System operating environment and uses a synchronous pipeline multistream-processor architecture, which allowed Warren to move back and forth between unobscured subimages to compile a composite.

Van Sant and Warren's *first picture of Earth sans clouds*

Having assembled the final, cloud-free images, the individual components of each piece had to be mapped to fit into a flat, rectangular image. The final Earth image produced for the screen was 8,000 by 4,000 pixels and required 150M bytes of memory. Because the workstation maxes out at 128M bytes, the image had to be filtered down before it could be loaded for manipulation. Stardent engineers took the 8,000- by 4,000-pixel image and mapped the data around a sphere for screen presentation. The monitor screen rendition of the world map was unveiled last month at Stardent's Newton, Mass.-based headquarters.

"The ecological immediacy — the force of it — hits you in the face when you first see it," said George Newman, an industry analyst at International Data Corp. in Framingham, Mass., who attended last week's presentation. "The final result should be astounding."

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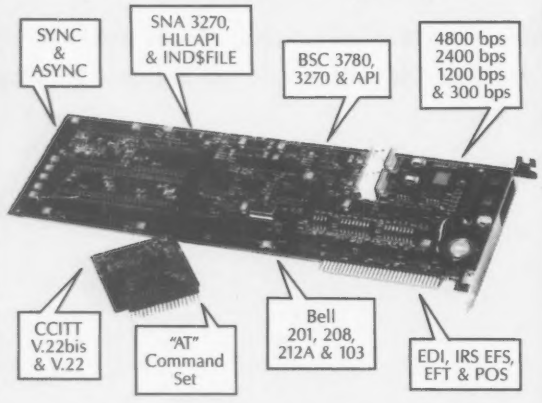

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FAA outsource plan is grounded

BY J. A. SAVAGE
CW STAFF

Caught in a battle between government agencies, a plan to outsource the Federal Aviation Administration's administrative computer services for as long as 10 years has been placed on hold, despite an original promise to award the estimated $1.5 billion contract three months ago.

The 10-year program, called Computer Resources Nucleus Project (CORN), would spare the FAA's centralized data services an annual request to Congress for more money for upgrades [CW, Feb. 26]. The Data Services Division, located in Oklahoma City, grows in funds demanded by about 30% per year, resulting in frequent upgrades, the FAA said.

After conflicting testimony between the FAA and the General Accounting Office (GAO) over the plan before the House Appropriations Subcommittee on Transportation last month, FAA administrator James Busey told the subcommittee he would call in a third party to investigate the conflict. The third party is scheduled to report back to Busey by the end of the month, when the subcommittee will design FAA's budget for next year.

The GAO, Congress' investigative arm, has chided the FAA over the last decade for poor acquisition procedures in modernizing its computer infrastructure, and the FAA has often agreed with the agency's criticism. This time, however, the two "are diametrically opposed on everything," said Mike Sherwin, director of management systems at the FAA.

CORN would allow the FAA to spend its time on applications rather than annual budgets but would lock it into one vendor and its subcontractors during that time.

Data Services chronicles pilots, keeps statistics on airplane trade and teaches air traffic control to students and aircraft maintenance to technicians. It also processes the payroll for the Department of Transportation, which will soon reach a size of 125 million checks biweekly.

Nearly all of the administrative work at Data Services is processed on a single IBM 3084 mainframe and 22 Data General Corp. MV/15000 computers, running a total of 23,000 programs. Still, much of the center's work, such as aviator registration and airplane registration, is done manually.

Getting the ball rolling

The FAA's current IBM 3084 mainframe is at 86% capacity. While the FAA had originally planned on postponing an upgrade until the CORN contract was decided, it recently began an interim procurement of an IBM 3090 Model 300-class mainframe, according to Leo Epperson, the division's assistant manager, who said he expects to have the new mainframe by September.

The GAO concluded that the FAA does not have the basis for awarding a contract such as CORN at this time, according to JayEtta Hecker, director of the GAO's resources, community and economic development information systems in the division of information management and technology.

Hecker said that because CORN was based on hardware enhancements, software could still be a problem. "There is no effort to improve and enhance software, so they could be rehosting applications with the same inefficiencies," she said.

Epperson protested that Hecker looked at one program with only 30 users whose response time was reasonable, while the main database has as many as 1,700 users at one time and response time is usually slow due to hardware constraints.

Nevertheless, Epperson said he welcomed a third-party evaluation. "If there are ways we can improve, I'd certainly like to do that. But if we're doing good, I'd like to know that, too," he said.

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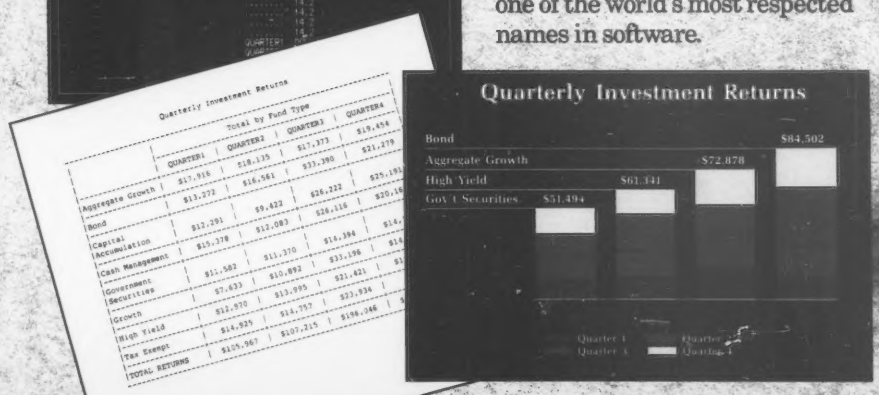

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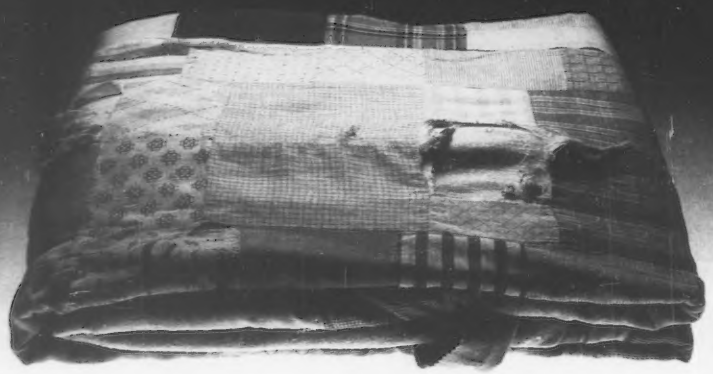
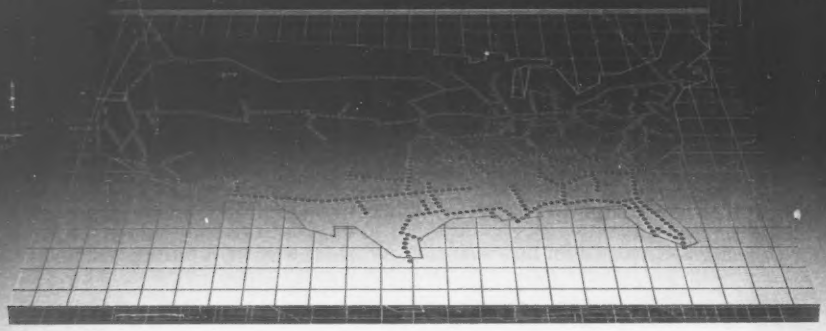


800 PATCHWORK.



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ADVANCED TECHNOLOGY

Programmers write right on cue

Notepad-size computers are starting a trend toward handwritten electronic data

BY JAMES DALY
CW STAFF

Is the pen mightier than the keyboard? Many hardware developers, software programmers and venture capitalists certainly think so.

Spurred by a series of recent technological leaps, the arrival of notepad-size computers that allow users to enter data by writing rather than tapping keys has many conjecturing that the "scratch-pad computer" could have an impact on the industry unlike anything since the advent of Apple Computer, Inc.'s Macintosh.

Two scientific achievements in particular have been instrumental in shoving scratch-pad computers into the marketplace: low-cost, powerful microprocessors and LCDs with electromagnetic sensors able to detect the motion of a metal stylus.

Scratch-pad computers *could be used to take inventory in supermarkets*

The key breakthrough, however, is that programmers have developed the software necessary to translate printed letters into data that a computer can understand.

Most of these packages work in one of two ways. Some applications act as a huge database where the written image is compared to a library of stored letters and words. The computer then makes the closest match and digitizes the information. In other cases, the software is customized and later adapts to the writer's penmanship.

At Best Foods Baking Group, scratch-pad computers are already a big part of the work environment. The Fairfield, N.J., firm has begun outfitting 1,500 delivery truck drivers with Grid Systems Corp.'s Gridpad to replace paper forms and keep tabs on their inventory.

The groundwork for similar applications is being done at such firms as Southern Pacific Transportation Co., Gillette Co. and Marion Merrill Dow, Inc.

Grid Systems, based in Fremont, Calif., is the only U.S. manufacturer now selling a scratch-pad computer — but not for long, according to industry followers. Next month, Scenario, Inc. in Boston is expected to introduce a $1,995 model called Dynawriter, and Sony Corp. and Canon, Inc. have introduced models in Japan that they presumably will export stateside in the near future.

Additionally, Go Corp. in Foster City, Calif., and Momenta Corp. in Mountain View, Calif., have pen-based systems in the works. Even such heavyweights as IBM, Microsoft Corp. and Apple reportedly have their own research efforts under way.

Investors said they believe the firms sit atop an untapped gold mine. "Most of us have used a pen since before we could talk, so it's a very natural way to be introduced to a computer," said Vern Raburn, chairman of Slate Corp., which plans to produce software for the emerging market.

As a result, market researcher Infocorp estimates the annual sales of pen-based computers will grow to 3.4 million units by 1995, up from only 22,000 per year today.

Most analysts feel pen-based computers represent a huge growth area because the technology could make a computer approachable to someone who does not ordinarily type or who is put off by computer technology. A scratch-pad computer could slip easily into the routine of workers ranging from delivery truck drivers keeping tabs on inventory to police officers visiting the scene of an auto accident or lawyers updating their files without disturbing the quiet of the courtroom.

Police officers *on the scene of an accident could scratch a few notes on a notepad-size computer*

Ultimately, the scratch-pad computer is expected to perform all of the functions of laptops with keyboards, including organizing columns of numbers, scanning large databases and communicating with computers of every size.

Although expectations are high, there are still concerns. Because the technology is still developing, "one of the biggest problems is overblown expectations about what the machines can do," said E. Gray Glass III, an analyst at research firm Prudential-Bache Securities, Inc.

One problem is that writing on a pen-based computer is unlike the handwriting most people do every day. With most people, letters and numbers are seldom written the same way each time, and some people's handwriting is simply illegible.

With a pen-based computer, letters must be carefully crafted, often in capital letters, one at a time and with adequate spacing because computers can't pick up the nuances and inconsistencies of the average person's penmanship. Computers that recognize cursive script are years away.

Developers said the market is in a crucial period where it must go beyond simple writing recognition.

"If these machines are more hostile than pen and paper and do nothing more, people will be unaccepting," said Raburn. "Ultimately, when people use a computer, all they want to know is, will I get out at 5 or do I have to stay until 5:30?"

Much of the acceptance relies on how many developers come up with useful applications. But with the hardware developments creating different computers, software vendors also face a key dilemma in deciding which operating system to write programs for.

Grid Systems may also have the advantage of using the MS-DOS operating system, which has thousands of applications already written for it. Go, on the other hand, will reportedly rely on a proprietary operating system with a minimal software base.

An ensuing lack of interoperability could soon become a systems nightmare in much the same way that the lack of cohesion among personal computers of various makes tripped up the industry in the early 1980s. That could slow down applications development and hinder growth of the promising technology, analysts agreed.

The NSF grants financial favor — to the little guys

BY MICHAEL ALEXANDER
CW STAFF

Small high-technology firms working on risky projects must often struggle to find the financial backing they need to turn research into commercial reality. To help spur research, especially on projects with potentially big payoffs, the National Science Foundation (NSF) awards grants to small high-technology firms under the federal government's Small Business Innovative Research (SBIR) program.

The NSF recently gave out 170 grants totaling $8.4 million to 139 firms. The recipients, which received an average of $50,000 for each project, were selected from 1,544 proposals submitted last year.

The funded projects range from research in using high-energy electrons for treating wastewater to using gallium arsenide electronics for infrared sensors.

Intelligent Automation, Inc. in Rockville, Md., for example, received a grant to continue its work on a neural network computer controller for a robotic arm able to move on six axes.

"The project is still in its early stages, but we are working on using neural networking computers for machine tool control and for machine tool calibration and error calibration," President Leonard Haynes said. "Neural net computers have the potential for the machine to learn from its own mistakes and improve its performance."

The grants were made under phase one of a three-year program. Next year, after phase one research is completed, the projects that appear likely to result in economically or socially beneficial products or services will be eligible for phase two awards of $250,000 for two additional years of research, according to the NSF. Phase two product development, manufacturing and marketing is funded by private investors.

"It's a good program. So many of the normally advertised contracts are too large for small business or wired for a particular company," Haynes said. "The SBIR really allows the little guy to submit a proposal that he knows will be fairly reviewed and that he really has a chance to get."

EDITORIAL

DOS lives

MICROSOFT IS TROUBLED and somewhat miffed that the industry doesn't better understand its operating system strategy, but the confusion is as much its own doing as anybody else's.

Two weeks from now, Microsoft is expected to announce a new version of Windows that will obliterate the 640K-byte DOS memory limit that Microsoft itself once described as impenetrable. Last week, the company announced a tool kit for moving Windows applications to OS/2 Presentation Manager, indicating that what once appeared to be a difficult and expensive migration really isn't.

The hidden message is that if you wait long enough, someone will find a way to make the impossible possible. And that is bad news for OS/2.

When OS/2 was first announced three years ago, the industry had worked itself into a lather over the DOS memory barrier, which was accused to killing innovation and stalling the industry. Microsoft positioned OS/2 as the answer to those problems.

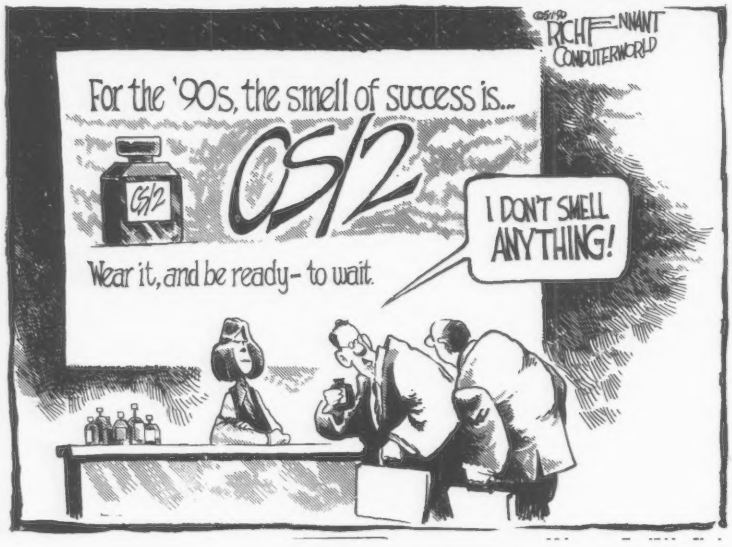
Today, a sobered Microsoft is singing a different tune. In an OS/2 briefing last week, Microsoft's Peter Neupert, senior general manager for OS/2, advised that "rather than looking for compelling [OS/2] applications, . . . let's look for services, the intrinsic value of the environment." That's a far cry from the Microsoft line of early last year, which was that the only thing holding back OS/2 was the lack of applications.

The lessons Microsoft is learning go back as far as the computer industry itself: Don't confuse your customers, and don't underestimate the power of an installed base. OS/2's biggest enemy isn't lackadaisical developers or skittish end users; it's MS-DOS. Microsoft and others have made incredible strides in paving over gaps in DOS and extending its limits. This month's expected introduction of Windows 3.0 will be DOS's finest hour, proving that the limitations that looked so imposing a short time ago really aren't that formidable.

Is it any wonder that the corporate standard-setters are leery of committing to the next generation when the current generation still has so much life?

If environment really is the key, then OS/2's lot will be cast with corporate information systems. Neupert stated that corporations intent on building "mission-critical" applications are driving the success of OS/2. Those decision-makers must increasingly be asking how many of their desktop users really need true multitasking when all they use is a spreadsheet, and how urgent the move to OS/2 Presentation Manager must be when Microsoft is blurring the line between it and Windows.

There are some compelling reasons for corporations to build mission-critical applications on OS/2, but the urgency of making the move diminishes with each improvement to DOS. Unless Microsoft can make the distinction clearer, it should accept the fact that migration will be slow going.



LETTERS TO THE EDITOR

EDI initiative

Your editorial, "On the fence" [CW, March 26], is right on target. It touches the very heart of the challenges confronting the electronic data interchange community. I agree that it would be unfortunate to let these challenges impede EDI's progress.

The Electronic Data Interchange Association (EDIA) recently announced a major initiative — the Small Business Partnership Program, which includes a specialized group of products and services as well as educational programs. This year, we will publish a "Small Business EDI Handbook," designed to cover the basics of EDI, from audit and control issues to transaction sets. A program of regional seminars, designed specifically for the small-business executive, is being organized. And we are active in the government arena, working with individuals such as Rep. Esteban Torres (D-Calif.), who announced his intention to seek incentives for businesses to enter EDI while attending EDIA's annual conference.

Only through its acceptance and implementation by small businesses will EDI continue to grow and reach full potential. We invite *all* businesses to get off the fence and get on the EDI bandwagon — before it rolls over you.

Jerome L. Dreyer
President and Chief Executive Officer
EDIA
Alexandria, Va.

MIS-management

Your article "First-ever CIO for IRS to be named" [CW, April 9] described, in general terms, the background of the first chief information officer for the Internal Revenue Service.

Surely, you must have omitted some of the major elements of Henry H. Philcox's qualifications.

Did Philcox really make "his *systems debut* as assistant regional commissioner for data processing" in 1984? Whatever his other posts may have been, if they were not directly related to automated systems development, the IRS — which is already train-wrecked enough, according to recent congressional testimony — apparently placed a two-year IS rookie over its redesign effort in 1986. And now he has been made the service's first-ever CIO?

The agency's recent data processing modernization effort has included the well-known 13-diskette debacle, involving the purchasing of many millions of dollars of laptops for use by field agents. Equipped with units that have no hard disks, the agents were the innocent victims of software design and coding which reportedly required the use of 13 diskettes at runtime. This is only the most recent, highly expensive example of MIS-management within the IRS.

As for Philcox's optimism concerning the overhaul of the service's automated operations, I hope the General Accounting Office was incorrect in throwing up a caution flag after having reviewed the master plan analysis effort. I am generally an optimist myself, but I don't believe that taxpayers are in any mood for more bad joke material from the IRS.

I wish you well, Mr. Philcox.

Jim Giddings
Upper Marlboro, Md.

'Stop whining'

Regarding the article by Merilee Wong, "Rights of working parents" [CW, March 19]:

Obviously Wong is full of frustration from events that she perceived as unfair. One of her premises seems to be that there is discrimination in the workplace against parents, which amounts to discrimination particularly against women.

Actually, "discrimination" means to "distinguish between." I get the feeling that Wong's anger is because there is not enough discrimination: She wants special privileges for parents.

As a married man with no children, I object to her demands. An individual's decision to have children is a choice of lifestyle, and they are solely responsible for that decision. Please don't ask me to pay for your children.

Life is full of facts we cannot change. I have never heard a man cry "foul" because women statistically live longer. Perhaps unfairly, women get pregnant and not men. And children require constant supervision and attention for many years. I believe that supervision is best delivered by a loving parent.

You raise your kids the way you believe is best. If that requires sacrifice on your part, I

Continued on page 29

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax: (508) 875-8931; MCI Mail: COMPUTERWORLD.*

The worst strategies for the '90s

MARTY GRUHN

Welcome to the 1990s and a new decade of computing.

Along with the new technologies will come new and not so new strategies from industry suppliers. Here are my picks for the worst of the genre.

They represent the ultimate in sloganeering. They are the products of shell-shocked marketing firms that have somehow lost contact with their customers. At best, watching these strategies unfold will be amusing. At worst, they offer a framework for problems to come.

Most of these strategies are flawed when viewed at close range. They either don't make business sense for the customers or the vendors, are rewrapped slogans or are self-serving solutions to the industry's ills.

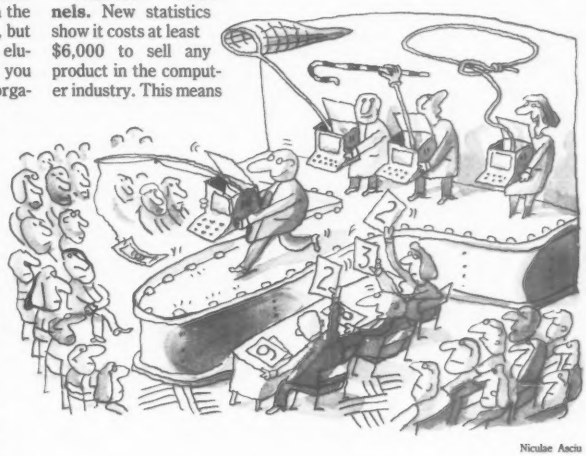
The year of the customer. Forget this one. What it really means is that the vendor has been ignoring its customers for at least two years, and competitors are giving it a run for its money. Now, it's trying to kiss and make up — and find new ways to sell you something.

Systems integration. Now that hardware margins have evaporated and service and support cash cows are drying up, vendors are scrambling to find new ways to make a profit. Welcome to "systems integration," or how to charge you to fix things that shouldn't be broken. This strategy looks good on the vendors' proposed top lines, but long-term profits could be elusive. Let's get real. Have you ever known a development organization that could bring a project in on time or under budget?

Strategic alliances. What strategic alliances really mean is that the vendors can't figure out how to make or market the right products for the right customers and need to lean on each other for help. Frankly, less than 10% of these agreements are anything more than marketing fluff. Most are "positioning" nonsense that never hits the bottom line. To identify whether an alliance will provide real value to you, look for money changing hands. Otherwise, it's just another public relations ploy.

Facilities management. Don't get me wrong, there are some firms that probably need help managing their computer facilities. The problem is that letting a vendor manage your data processing is a lot like letting the fox manage the chicken coop. Go ahead, hand over mission-critical operations to a firm with a proprietary agenda. In the long term, this strategy simply does not make business sense. Before the end of the decade, the vendors will figure this out as well.

Indirect channels. New statistics show it costs at least $6,000 to sell any product in the computer industry. This means that most manufacturers have been selling at a loss and making it up in volume. Their solution? Embrace indirect channels and transfer the problem to someone else. The result is indirect channels, such as Businessland, that offer every conceivable product are consolidating because profits are elusive. When these channels buckle underneath them, the vendors will be back to square one.



Niculae Aaciu

Selling to the Fortune 500. If the 1980s was the era of the individual, the 1990s will be the age of the Fortune 500. The reasons are simple. Vendors marketed their way through the 1980s with warm and fuzzy slogans, and now the messages aren't getting through. Vendors have to sell rather than market their products, and they can't sell to individuals at a profit. The solution? Woo Fortune 500 firms to justify the cost of sales. Read my lips. There aren't enough short lists of approved vendors to accommodate all of the vendors targeting the Fortune 500 companies.

Niche marketing. Niche marketing is the ultimate buzzword for industry suppliers who have abandoned industry-specific and vertical market strategies to focus on the needs of end users. Frankly, most niche marketing programs are really old vertical market strategies wrapped in a bright new package. The result? Hundreds of salespeople are running around in all of your departments trying to figure out what you are willing to buy.

Enterprise automation. No, this is not a new screenplay for the next Star Trek extravaganza. It's the industry's latest slogan for gaining control of major accounts. The good news is that there are companies that need help with worldwide automation, and they are willing to pay big bucks. The bad news is that only three or four vendor companies can play, and the dance card is already filling up. Since DEC and IBM are already in the game, that leaves room for two more players at most. This is a nonstrategy for the rest of the industry as well as for most customers.

There they are. The eight worst strategies for the 1990s. Face it, after decades of easy pickings, computer vendors are now at a crossroad where old rules don't apply and new rules have yet to be defined. That's bad news for those vendors who are still chasing these and other rainbows — and for the customers they serve.

Gruhn is a consultant and former vice-president of The Sierra Group, Inc.

Cloning the way to the top: Another PC market lesson

STEPHEN SMITH

Today, Apple and Compaq are traditional personal computer leaders struggling to maintain their historical growth, while clone vendors such as AST and Everex are reporting record sales. What's going on? Is the slowdown at Apple and Compaq just a pause, or is it something more fundamental?

The domestic PC business is becoming primarily a replacement and upgrade market (except for the exploding laptop area). Thirty percent of white-collar workers already have a PC on their desks. Worldwide, close to 50 million PCs have been shipped. Concerned about protecting their hardware and software investment, replacement buyers are demanding a painless upgrade and more in terms of price, quality and functionality.

In a shift from last year, the high end of the PC market is no longer the fastest growing segment. Lower end Intel 386SX-based models in particular are selling like hotcakes. While both Apple and Compaq have continued to focus on the high end, IBM may have been the first to pick up this change. Its recent 386 market share gains at Compaq's expense stem from very competitively priced 386SX and low-end 386 products.

Clones to the rescue

The apparent conclusion of many has been: PC prices are too high. It's time to consider buying a clone. The quality of the average clone has improved dramatically in recent years. Because it doesn't cost much more to make a 386 system than a 286, the other clone vendors are eyeing the fat profit margins on Compaq's bread-and-butter 386 business, and no longer does Compaq have a six-month lead on the new technology. Why? While Compaq wants to preserve its premium pricing, Intel and Microsoft want PC prices down so they can sell as many units as possible.

So why should the semiconductor and software vendors favor Compaq? It's no accident that AST was first to ship a 486-based system. Extended Industry Standard Architecture- and Micro Channel Architecture-based clones are here. Thus, it's not as necessary for users to make a "safe" (Compaq, IBM) decision when it comes to buying a second PC.

In addition, there is the dramatic rise in the acceptance of Microsoft's Windows. Much to IBM's dismay, there is still little interest in OS/2. The principal problem is that the move from DOS to OS/2 is more revolutionary than evolutionary in nature. The DOS compatibility box is not enough. Users want a painless upgrade path. It has taken long enough, but now there is a near explosion of Windows-based applications.

Finally, there are decent word processors (Word or Samna's Ami) for use with Windows. Even Lotus has had second thoughts. Though Windows is not "as good as" the Macintosh user interface, it is good enough for a growing number of users. For as little as $59.95 (depending on configuration), Windows is a very attractive way to upgrade an existing PC so it can run such sexy, new graphics-based applications as Excel and Draw.

Low-cost PCs running "good enough" Windows applications are beginning to hurt Apple. How many users today can afford all that "good stuff" on the high-end Macs? Apple's recent product direction has centered on improving the functionality of the high end. While no one comes close to the functionality and ease of use that Apple is delivering, it has miscalculated what the majority of users really want and are willing to pay for.

Forget OS/2 and Unix (for now) — Windows is the next PC operating system. What else but an operating system can overcome DOS' 640K-byte limit and bring multitasking and virtual memory to the DOS world?

Microsoft's forthcoming Windows 3.0 release is likely to answer a number of the major criticisms levied against Windows 2.0. Most significantly, Windows 3.0 will probably enable a user (at the 386SX or higher level) to load multiple (and not only Windows-based) applications and switch between them effortlessly without running into the problem most DOS users face today: not enough memory.

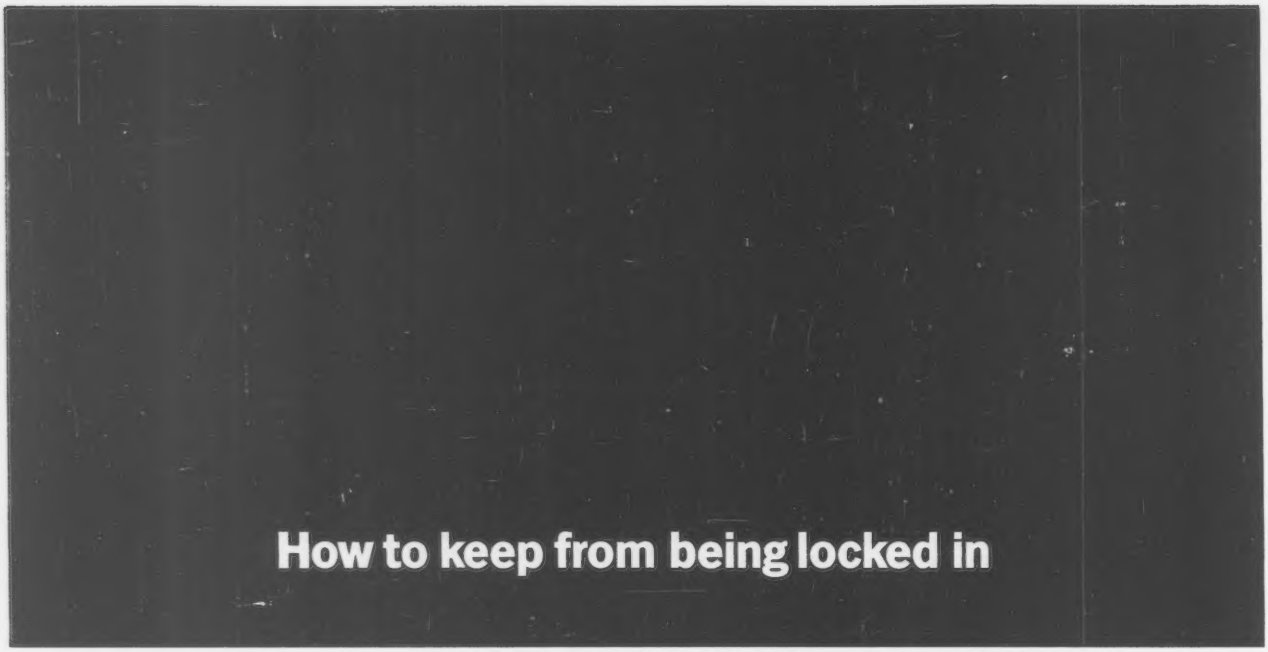
So in the long run, these new upgradable machines make a lot of sense. Do you always replace your whole stereo system at once? Sometimes just replacing the speakers can make a big difference. Likewise, buyers have seen how rapidly they can outgrow a PC in one aspect of performance or another. Instead of throwing out an old PC, is it not more cost-effective to just upgrade the CPU board?

Thus, it is no surprise that upgradable PCs have met with success. The basic argument (Compaq's view) against upgradable machines is that all the technologies (disk, I/O, processor, memory) are changing rapidly and that a user will need to upgrade all at once.

While it is certainly true that a 486 used as a server requires a dramatically different configuration than does a 386 desktop machine, many users may not require so radical an upgrade. They may simply need more power to run Windows faster.

For Compaq and Apple, this scenario begs for response.

Smith is first vice-president of research at Paine Webber, Inc. in New York.



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Continued from page 26

applaud your selflessness. If your decision requires sacrifice on my part, I'm going to resist.

The point is: You live your life, you make your own decisions, you pay the consequences, and you reap the benefits. Stop whining.

Thomas York
Dorr, Mich.

Thinking green

In response to David Batterson's letter to the editor [CW, April 16] bemoaning the software industry's lack of concern for the environment, we have been recycling glass bottles, soft drink cans, obsolete manuals, cardboard boxes and paper for some time now. We also use recycled paper for all our in-house needs (in our copiers and printers). Making the switch to recycled paper for our manuals (and corporate letterheads) required more persistence and research.

The technology of paper recycling has come a long way, while the U.S. paper industry still lags behind. Currently, the quality and cost of recycled paper is comparable to paper made from virgin fibers, yet few paper mills in the U.S. are producing recycled paper. We have found recycled paper that meets our standards, and our printer vendors do not seem to have any trouble with it. Recycled paper may require a longer lead time to receive, but as consumers create more pressure on the paper industry, we hope that recycled paper will be more readily available.

Our next concern is finding alternatives for Styrofoam filler (peanuts) and plastic shrinkwrap. We recycle all Styrofoam filler that comes in packages sent to us, use paper filler when we are out of Styrofoam to recycle and are researching a shredded cardboard filler alternative.

However, we have yet to find an alternative to shrinkwrap and would appreciate any suggestions and ideas from other organizations.

Terri Clyde
Documentation Coordinator
Walker Richer & Quinn, Inc.
Seattle

Kermmunications

In the article "Calculator sports PC plug" [CW, March 19], J. A. Savage said that the $350 Hewlett-Packard HP-48SX calculator can be plugged into a personal computer with the addition of a standard cable and communications software for $60. To use the communication features of this calculator, your readers need to know what the communications software is: It's Kermit.

To download programs to this new and advanced calculator and upload results to the PC, the same software has to be available on the PC — in this case, MS-DOS Kermit, which recently had a major new release, 3.0. To exchange files with the Apple Macintosh, Mac Kermit is needed.

Since the calculator can be equipped with an RS-232 communication connector, it can be used not only with PCs and Macintoshes but also with hundreds of other kinds of computers, because there are approximately 400 different implementations of the Kermit software available. Kermit software is distributed by Kermit Distribution, Columbia University Center for Computer Activities.

Christine M. Gianone
Manager, Kermit Development and Distribution
Columbia University
New York

The wrong unit

Computerworld recently ran a news brief discussing Andersen Consulting's research and development efforts in our "New Age" systems area [CW, March 12].

Andersen Consulting is a separate member firm of the Arthur Andersen Worldwide Organization.

Specifically, the author referred to Andersen Consulting as a research arm of Arthur Andersen & Co. In fact, Andersen Consulting is a separate strategic business unit of the Arthur Andersen Worldwide Organization.

Daniel F. Collins
Director of Communciations
Andersen Consulting
Chicago

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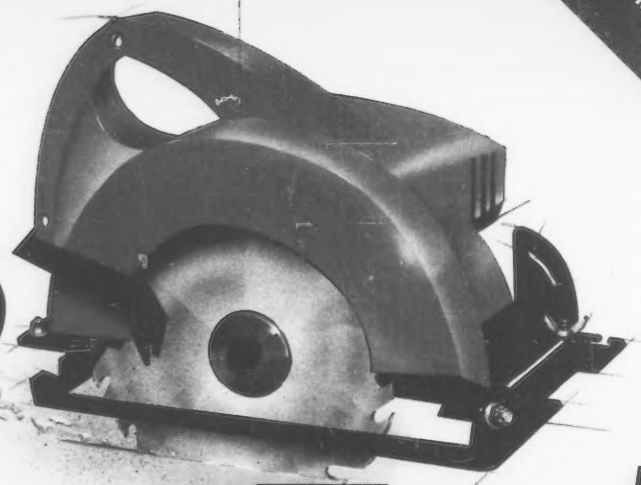

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SOFT TALK

Amy Cortese

A new blueprint

It's no wonder that software architectures are all the rage lately. They make vendors look smart but don't require the developer to deliver new products, at least right away. IBM's Systems Application Architecture (SAA), the granddaddy of software schemes, is still embryonic three years later.

The latest example, Computer Associates' CA '90s, is also conceptual in nature but much further along in its implementation than SAA was at its introduction. That may be true, at least partially, because it builds on the work that IBM and DEC have done. The firm points to many software services that are already generally available, particularly in the MVS and VSE world, and hints that others will be rolled out at an aggressive pace. Although CA's new blueprint takes a page from IBM's SAA, it may well outmaster the original master architect.

Whether you believe CA's assertion that it had this strategy in mind all along — that each acquisition was undertaken to provide a critical piece in the puzzle — the truth is that, today, it sounds pretty good.

It's clear that CA has been working on this for at least a year. The company's Application Construction Environment (ACE) announcement last February [CW, Feb. 12] laid the

Continued on page 39

For better and worse

Reusable Ada code seen as primary advantage

BY GARY H. ANTHES
CW STAFF

GREENBELT, Md. — For those who fear that Ada may be the programming language with permanent potential, the National Aeronautics and Space Administration has good news and bad news.

As a result of one of the few efforts yet undertaken to rigorously compare Ada promise with Ada reality, a group at the Goddard Space Flight Center has found that the use of Ada can dramatically cut software development costs as a base of reusable Ada components is built up over time.

However, Goddard's Flight Dynamics Division, which compared nine Fortran-based flight simulation systems with eight similar applications written in Ada, found that Ada has not yet lived up to its promise in other respects. NASA found no improvement in the number or severity of coding errors, and it saw much worse performance from operational Ada systems.

Ada was adopted as a standard by the U.S. Department of Defense in 1980. NASA, with similar systems challenges, has begun to embrace the language but has no formal policy governing its use. However, NASA has mandated the use of Ada for systems that will support the Space Station, for which millions of lines of code will be written.

Knowing Ada

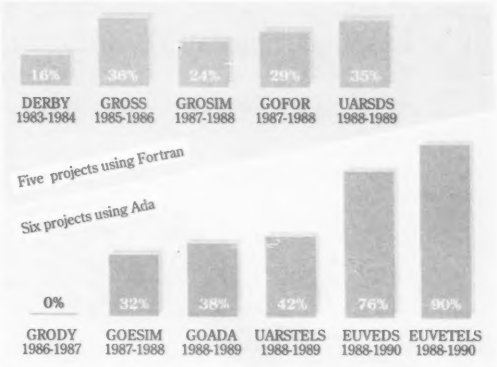
At present, however, the Flight Dynamics Division has more experience with Ada than does any other group at the space agency, said software systems engineer Edwin Seidewitz. Its eight major Ada projects, the first of which began in 1985, contain on average approximately 100,000 lines of source code.

According to Seidewitz, Ada has so far produced no increase in raw coding speed. Including time for design, coding and testing, the Fortran systems in the sample were built at an average rate of about 14 Fortran statements per day. Most Ada systems showed rates between nine and 11 statements per day, although later projects showed improved speeds.

Continued on page 41

Long-term gains

NASA found that the advantages of Ada over Fortran show up in the way Ada allows program code to be reused



Source: National Aeronautics and Space Administration — CW Chart: Doreen Dahle

Imaging bolsters Bank of Boston

BY ROSEMARY HAMILTON
CW STAFF

Bank of Boston recently reported a 40% productivity boost from an IBM imaging system that was installed late last year.

The bank is using the IBM Imageplus mainframe software to automate its deposit account management department, which handles both corporate and retail accounts. After a five-month pilot project, it shifted into production mode in March, said Michael Lezenski, director of technology and operations.

Currently, the imaging system — powered by an IBM DB2 database — is managing corporate accounts and supports 16 workstations. Images are stored on 3380K drives and then sent to optical drives for long-term storage.

Lezenski said he hopes to be running 25 workstations by midsummer and also plans to add retail or individual accounts to the system.

Lezenski said the move to imaging called for rethinking the way deposit management was handled. It will also reduce the staff of 41 to approximately 25, Lezenski said. The department will reduce its ranks through attrition over time rather than a one-step layoff, he added.

The department was run by two distinct groups, with one handling the front end of account management and the other doing the actual account updates. With this system, the paperwork was first handled by one group and then passed to the other group for processing.

Out with the old

The old system left room for more errors, since paper was traveling from one group to another. Further, it limited the staff's capabilities because their responsibilities were so specific, Lezenski said.

With the imaging system, the two groups were merged, and staff members are assigned accounts to manage from start to finish. Work is assigned to them based on their skill levels.

Staff members now handle account transactions at a rate that is 40% faster than under the old method, Lezenski said.

Bank of Boston chose this imaging system in part because it has been a longtime IBM customer. The bank already had a 3090 Model 600S running MVS/ESA and now runs the imaging software in one partition of the operating system.

It has also given the thumbs-up to an IBM check-processing system. IBM announced the check-processing capability, a joint venture with several banks, in March. Bank of Boston was not part of this pilot project, but it plans to purchase the system by year's end.

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A Comparison Chart of the Major Cooperative Processing Software Products:

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Processing Topologies Supported						
Peer-to-Peer Processing	✓			✓		✓
Existing terminal-based systems	✓	✓	✓		✓	
Mixed Peer-to-Peer and existing systems	✓					
Application integrity/Software Distribution	✓		some			
SAA/CUA Interface compatibility	✓	✓	some			
Workstation Environments Supported						
PC/DOS	✓	✓	✓	✓	✓	✓
OS/2	✓	✓	✓	✓	✓	✓
PC/DOS to OS/2 application compatibility	✓		?			
LAN Server for shared applications and data	✓		?			
Multiple transaction servers on a LAN	✓					
Development Environment Comparison						
Object orientation	✓	some				
Dictionary and documentation	✓					
Panel/Form painter for creation/maintenance	✓	✓	some			
3270 screen capture: picture and attributes	✓					
CASE/Application Generation	✓	✓				
Intelligent (language-sensitive) editor	✓					
System and user-defined reusable code templates	✓					
Integrated compile/test/debug	✓	✓				
Execution time source debugging	✓	some				
All development tools for DOS available in DOS	✓		✓			
Objects Supported						
CUA display images	✓	✓				
CUA dialog within display object	✓					
Validation within display object	✓					
Help processing	✓					
Error processing	✓					
Text window interactions	✓	some				
Business graphics	✓	✓				
3270 definition	✓					
Interactions with 3270	✓					
Interactions with Peer-to-Peer	✓					
"Logon" Scripts	✓					
Application integrity/Software Distribution	✓					
Local Data Access						
Indexed files	✓		✓			
dBase	✓		✓			
Flat Files (random access)	✓					
Flat Files (sequential access)	✓	✓	✓			
Multiple read/write to files on LAN Servers	✓					
High Level Functions Directly Available in the Language						
Field-level context sensitive help	✓		✓			
Optional user learning mode	✓					
Display and selection from:						
Indexed files	✓		✓			
Sequential files	✓	✓	✓			
In-memory lists	✓	✓	✓			
Menu display and selection	✓		✓			
Determining 3270 screen identification	✓		✓			
Read/write to 3270 in a single command	✓					
Read/write to 3270 one field at a time	✓	✓	✓			
Determine dynamic 3270 attribute changes	✓					
Embedded user assistance (pop-up selection lists)	✓					
Data editing/validation:						
Data type/mark checking	✓		✓			
Single range/limit check	✓		✓			
Field/data driven range/limit check	✓					
Date formatting/validation	✓		✓			
Validation against local and LAN files	✓					
Required fields	✓		✓			
"Must Fill" fields	✓					
Zero not valid fields	✓		✓			
Peer to Peer Host Environments Supported						
MVS-CICS	✓			✓		✓
MVS-IDMS/DC	✓					
MVS/TSO	✓					
DOS/VSE-CICS	✓			✓		
VM/CMS	✓			✓		✓
DEC VAX/VMS	✓					
Software Distribution Host Environments Supported						
MVS-CICS	✓		✓			
MVS-IDMS/DC	✓					
MVS/TSO	✓					
DOS/VSE-CICS	✓					
VM/CMS	✓					
DEC VAX/VMS	✓					

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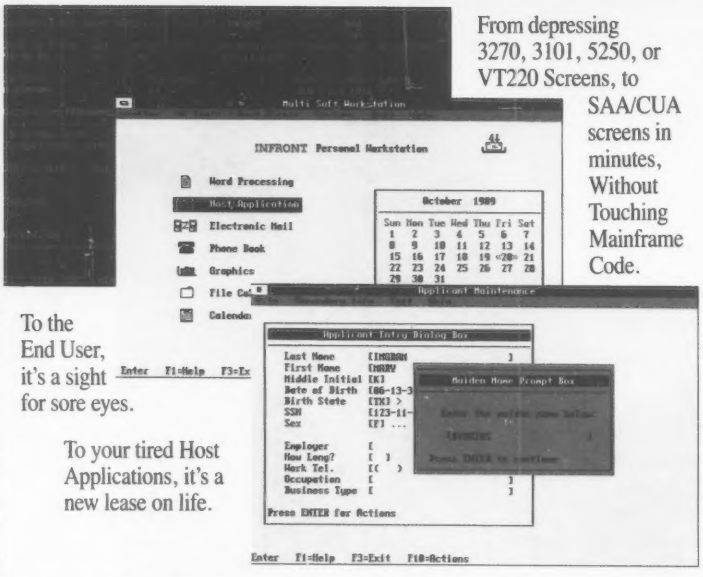

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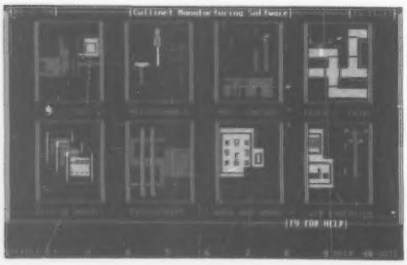

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Bar codes expedite Burris Foods' ability to deliver cold comfort to grocers

ON SITE

BY MAURA J. HARRINGTON
CW STAFF

MILFORD, Del. — The next time you walk down the frozen food aisle at the supermarket to grab a pint of ice cream or some frozen orange juice, think "Ed Krupka."

Krupka is president of Burris Informational Services, Inc. and is ultimately responsible for deliveries to the frozen food aisles of several major supermarkets throughout the Mid-Atlantic region.

Burris Informational Services is an independent subsidiary of Burris Foods, Inc., of which Burris Retail Food Systems is the core business unit, Krupka said. Burris Retail Food Systems focuses on the purchasing, warehousing, distribution management and merchandising of more than 4,500 different items of food.

The information systems division is responsible for processing and controlling the almost 1,000 orders — with each order calling for anywhere from one to 350 products — that come in weekly from these stores, as well as supporting the firm's refrigeration storage and delivery service.

An NCR Corp. System 10000 Model 75, installed almost two years ago, sits at the heart of the operation.

The Model 75 supports more than 50 terminals and personal computers, with communications links for taking remote orders, Krupka said.

"Some of our customers send in their orders remotely via a handheld computer over [IBM] 2780 and 3780 links, and we are also able to keystroke in orders received over the phone," Krupka said.

Calls for custom software

Each order is processed by using customized software developed in-house, which includes inventory, financial and historical purchasing information on each customer. When the order is processed, sheets of bar codes — one bar code per order — are sent to the company's warehouse operations division, located in Harrington, Del., a few miles away.

In Harrington, where the four-story refrigerated warehouse is located, workers called "pickers" find the food, put the bar-code label on the box and send it to the delivery docks via conveyor belt.

Burris Foods' *NCR 10000 and automated shipping system speed frozen food deliveries*

Routing information on the bar codes is then read by a laser beam located on the conveyor belt system, which directs the food to the correct dock for shipment, according to Krupka.

Although the conveyor belt system in the warehouse is not yet directly connected with the informational services facility in Milford where the bar codes are produced, Krupka said the company is now working on tying the two operations together through an electronic data interchange (EDI) system. That EDI link would transfer bar-code information from the host to the conveyor belt complex.

Although the in-house project could take several years to complete, Krupka added, "While there are still some things [regarding the EDI standards] that are not completely ironed out yet, there is enough common ground worked out to begin integration."

Buyers' aid

Another project slated for development for internal use at Burris Retail Food Systems is an automated purchasing system, which would act as an aid for buyers at Burris Retail, according to Krupka.

"When a buyer purchases the food from the manufacturer for our customers [the retail stores], he or she has to make a decision based on each customer's buying history. This program would assist the buyer by making that [purchasing] decision," Krupka said.

For example: Retail Store A usually purchases Brand X orange juice but is cost-conscious. One week the buyer for Retail Store A learns that Brand Y orange juice is on sale and is cheaper than Brand X.

Currently, the buyer has to research Retail Store A's buying history before deciding whether to go with the sale. With the automated purchasing system, the buyer would have the history on-line with the customer file to facilitate the buyer's decisions, according to Krupka.

A simple yet elegant route to EIS success

BY ELLIS BOOKER
CW STAFF

ROSEMONT, Ill. — Until a few months ago, Comdisco, Inc. Executive Vice-President of Marketing Robert A. Bardagy monitored the firm's far-flung leasing business by flipping through 4-in.-thick computer printouts.

That was before the information systems department wheeled a touch-screen personal computer into Bardagy's office, adding him to a list of a dozen top Comdisco executives now using an executive information system (EIS) to peek into the databases maintained on the company's mainframe.

"I was ready for it several years ago," Bardagy said. "I've always been a proponent of getting data on a high level, and now we finally have the vehicle to do it."

Comdisco selected Commander, a graphical interface EIS from Comshare, Inc. in Ann Arbor, Mich., last April, Comdisco Executive Office Chief Information Officer Diana L. Walker said.

Comdisco also evaluated systems from Pilot Executive Systems in Boston and Execucom Systems Corp. in Austin, Texas, but it was Comshare's commitment to a distributed processing product that tipped the scales, Walker said. Comdisco installed the standard mainframe version of Commander in September, five months before Comshare announced Version 2.0, which includes local-area network support.

Comdisco officials hope to have its EIS applications on the LAN version within two to three months, according to David A. Salach, application systems manager for executive support systems.

Comdisco's Bardagy *found his vehicle in EIS*

"A LAN will buy us large, server-based applications," explained Salach, who noted that some of the EIS applications already require 15M bytes of disk space on each PC.

The server-to-mainframe link will also be much faster than the mainframe-to-PC configuration, with file transfers taking one instead of eight hours.

Comdisco's EIS lacks some of the bells and whistles found on executive support systems at other companies. For example, it has no electronic mail or on-line calendars to keep executives in touch and on track.

"Anyone who uses an EIS for that doesn't know what they're doing," said James A. Stanton, a Comdisco senior vice-president and self-declared "user advocate" of the EIS.

Bardagy said he shares this disdain for the bells and whistles; he uses his PC to access three applications — revenue trending, territory overview reports and a yet-to-be-completed weekly accounting system — for a total of 15 minutes per day.

Furthermore, Bardagy and the IS department repeatedly tone down what they said are sometimes overly high expectations for an EIS.

The EIS software is installed on the company's Amdahl Corp. 5880, with an MVS/XA test environment running on an IBM 3081.

The system uses IBM Personal System/2 Model 80s linked by modem to a controller, which in turn is linked to the Amdahl mainframe.

Each night, data is downloaded from the mainframe to the hard disks of the PCs.

Proud of its stripped-down approach to EIS, Comdisco's IS department regularly walks its own customers through the system.

"It's amazing how many people have had an EIS but say it didn't work, that the CEO lost interest," said Stanton, who stressed the need to keep adding to and refining the systems to meet user needs.

For Walker, another explanation for these failures may be at the level of the database — the heart of any EIS.

> COMDISCO'S EIS lacks some of the bells and whistles found on executive support systems at other companies. For example, it has no electronic mail or on-line calendars.

She speculated that an EIS can show the holes in an information system, such as when data contained in two locations is found to be conflicting.

"One of the keys [to a successful EIS] is data integrity," Walker explained. "If you have a tightly integrated database already, you have a leg up on anyone else trying to put together an EIS."

Software architecture gets specific

The software architecture trend is accelerating. In addition to major hardware and, recently, major software vendors, industry-specific software suppliers are getting in on the act.

Systematics, Inc., the Little Rock, Ark.-based provider of software and services for the financial industry, last week unveiled a software architecture of its own that it said will dramatically reduce the time that it takes to develop new applications.

Dubbed Extended Application Architecture (EAA), the framework builds on IBM's Systems Application Architecture blueprint and revolves around its own IBM-compliant data repository to centrally store definitions, which can later be reused.

In addition, the firm announced Advanced Loan System for major lending institutions, the first financial application that fully takes advantage of the architecture, to be available next month.

A commercial loan portion will be available in the second half of 1991. The firm said it intends to migrate all of its 19 software packages to the EAA architecture.

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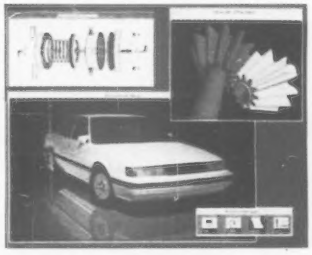

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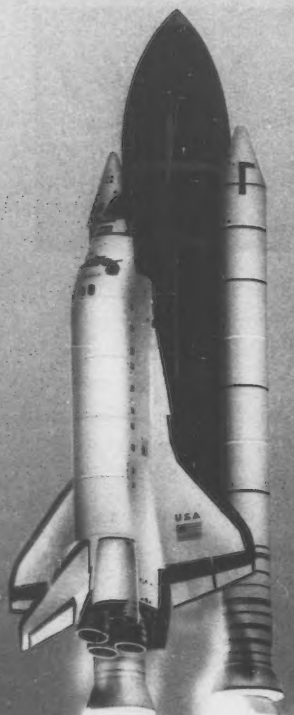

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Cortese

CONTINUED FROM PAGE 31

foundation for CA '90s development and set forth many of the philosophies that drive the strategy: adherence to dominant standards, application portability across disparate operating environments, migration to relational databases while supporting older systems and the use of repository services to manage applications. The guiding principles of CA '90s expand on these themes to include systems management software and applications.

At a reception last week, CA Chairman Charles Wang shared a stage with executives from IBM and DEC and publicly endorsed those firms' SAA and Network Application Support (NAS) strategies. However, in a later conversation, Wang took shots at those companies. He contended that SAA requires users to move to expensive and leading-edge operating environments such as MVS/ESA and OS/2 and that DEC's NAS was not clearly defined. With the CA '90s architecture, CA will bring SAA standards to IBM platforms shunned by the company, as well as to other vendor environments. As CA pointed out, there are no technical reasons why SAA standards such as Common User Access cannot be applied to other platforms such as MS-DOS, DOS/VSE or even DEC's VMS.

So, as hardware vendors devise software architectures that essentially tie a user into their hardware and operating environments, CA's hardware-independent scheme looks like an attractive proposition. Even cynical CA customers are tentatively optimistic.

But lest we forget whom we are dealing with, the charismatic Wang is above all a shrewd businessman who has said he wants to build his company into a $10 billion empire. While software architectures ultimately sell hardware for systems vendors, CA '90s is designed to sell CA software products.

Many of the integration services, such as single-point security, come from CA products. CA will support non-CA products on a selective basis — for instance, IBM's RAC-F security product and its upcoming repository — but not all products will be able to plug into the architecture. CA calls its blueprint an open architecture, but the interfaces into the CA '90s services are not available to third-party vendors, meaning they will not be able to create products that work in the CA '90s framework. CA said it would consider third-party requests on a case-by-case basis. Even IBM makes its specifications available.

Will users be locked into a CA '90s architecture? CA executives say "no." But they also acknowledge their own products will generally take better advantage of CA '90s services than will non-CA products. Bryan Shepherd, CA's marketing spokesperson, said, "There will always be a plus to using our products."

Cortese is *Computerworld's* Mid-Atlantic correspondent.

Group seeks to forge new era of knowledge-based software

BY AMY CORTESE
CW STAFF

NEW YORK — An effort to develop a new generation of knowledge-based software technology was announced late last month by five companies — Digital Equipment Corp., Texas Instruments, Inc., Ford Motor Co., US West and Carnegie Group, Inc.

The group, known as the Initiative for Managing Knowledge Assets (IMKA), will pool resources to develop technology they claim is lacking in expert systems products available today. IMKA's goal is to better manage knowledge as an asset and a competitive advantage.

At first glance, the group seems an unlikely assortment, but each company is an equity investor in, and customer of, Pittsburgh-based Carnegie Group, a developer of knowledge-based systems and the lead developer for the initiative. Admission is open to interested organizations, and an investment would be expected.

The initiative began in 1988 when discussions between the companies on what technology was needed for the future led to a $10 million contract to share and develop technology.

IMKA is already halfway through a three-year plan to develop a standards-based system that will work in heterogeneous environments. The group plans to have a first-phase product in fourth-quarter 1990, with a completed second-phase product about a year later.

The result will be a knowledge-based system — developed in the C++ language — that is built on standards such as SQL, X Window System and Unix. Members will be free to use the technology internally or in products.

The group cited four requirements for a knowledge-based system: powerful capture and presentation of knowledge, high performance and ability to handle large systems, integration and ability to be embedded within existing technology and distribution and access across multiple platforms.

"The technology available today addresses one or two of these things but not all four," maintained Denis Yablonski, president and chief executive officer of Carnegie Group. "Lack of any one of the four leaves holes."

David Fawcett, manager of expert system activity with Ford's electronic group, said Ford uses "one of everything." Still, he said, "to date, we have been unable to achieve the level of integration" needed to embed expert systems into existing engineering and manufacturing systems.

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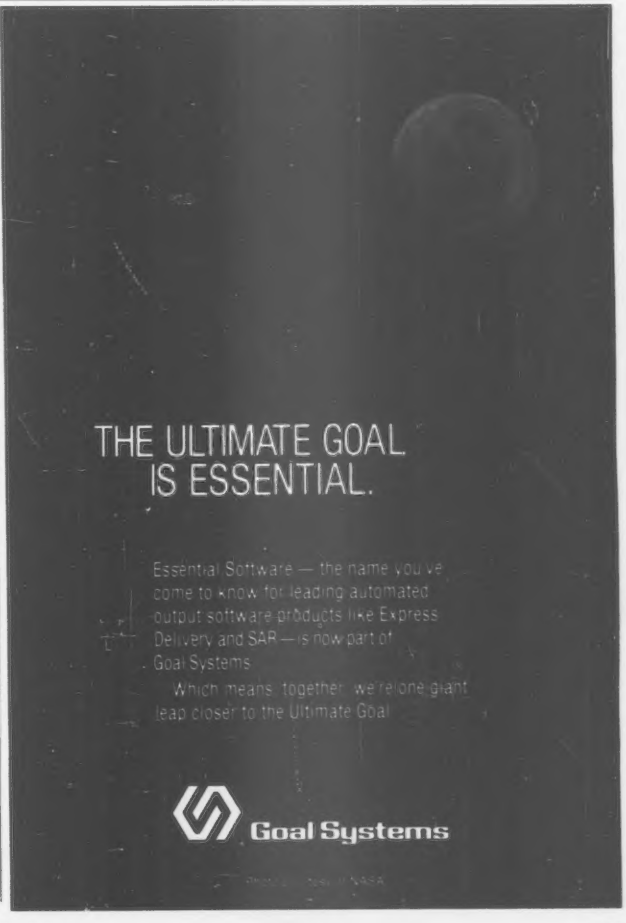

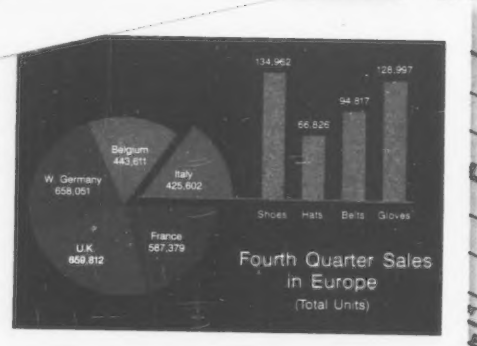

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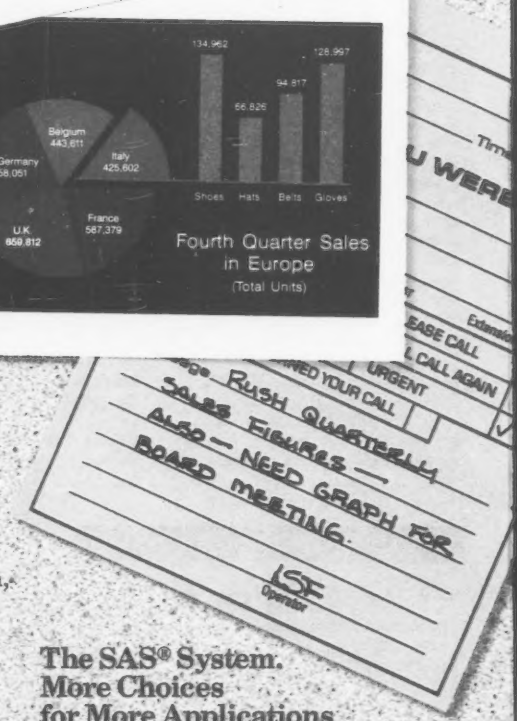

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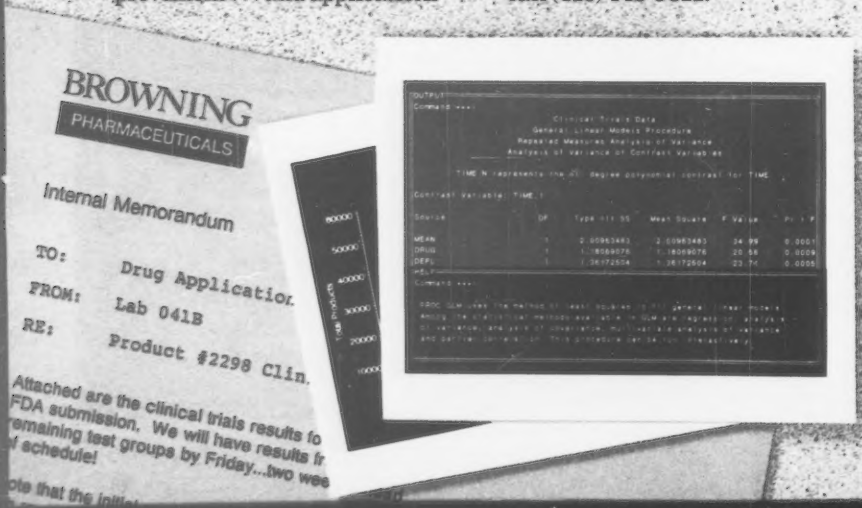


SOFT NOTES

HP to use Progress 4GL/RDBMS in Unix-based application package

Hewlett-Packard Co. announced that it will use **Progress Software Corp.'s** fourth-generation database management system, called Progress 4GL/RDBMS, in its new Unix-based HP Open MFG, according to Bedford, Mass.-based Progress.

HP Open MFG is a vertical market software application package designed for manufacturing resource planning.

The University of Otago in New Zealand, the University of Maryland and Stanford University were the top three winners in the **Association for Computing Machinery's** 14th annual Scholastic Programming Contest, sponsored by **AT&T Computer Systems.**

The international computing challenge called for answers — in the form of a computer program — to eight different puzzles. Of the 24 teams in the contest, six teams answered five questions correctly in the allotted time for a shared prize of $25,000 in computer science scholarships, according to AT&T. The company also donated AT&T 6386/25 Workgroup System computers to the top four contest winners.

Teams finishing in fourth through sixth place were Harvard University, Eindhoven Technical University in The Netherlands and the University of Wisconsin at Madison.

Digital Equipment Corp.'s European operation has teamed up with **Honeywell Europe S.A.** in a cooperative marketing program aimed at manufacturing and process control customers, the companies announced last week.

DEC and Honeywell will pitch a portfolio of applications packages and an interface product that links Honeywell's TDC 3000 process control system to DEC VAX computers and Decnet/OSI networks.

Honeywell, a Minneapolis-based international electronics firm, supplies automation and control systems for home and industry markets.

Informix Software, Inc. followed through on its promise to ship the Online Turbo Software database by the end of the first quarter — and made it with one day to spare. The company shipped the Online multimedia relational database management software on nine systems: Amdahl Corp. computers running the UTS Unix operating system; AT&T 3B2 computers; Compaq Computer Corp. computers running Microsoft Corp./The Santa Cruz Operation's Xenix; DEC computers running the Ultrix operating system; HP 9000 computers running Unix; IBM RT workstations; Pyramid Computer, Inc. machines; and Sun Microsystems, Inc. Sun-3 and Sun-4 workstations.

Boston Business Computing Ltd. (BBC), a software developer based in Andover, Mass., has introduced its VMS-emulation software products for **DEC's** Decstation 5000 product line. The software products, designed to help VMS users coexist with or move to Ultrix-based Decstations more easily, include four different emulation packages, according to Edward Gaudet, BBC's marketing manager. The emulation packages include EDT+, VCL, Vmail and Vbackup, Gaudet said.

ICL Business System, a division of ICL North America, announced that it has ported Version 4.03 of its office automation software package, Officepower, to AT&T's Model 3B2/600G Unix-based computer for use under the federal government's Standard Multiuser Small Computer Requirements Contract.

Officepower was designed to combine business management features with electronic mail, word processing, document conversion and file transfer, distributed print spooling and database management capabilities, the company said.

DEC and **Stardent Computer Corp.** announced that they will enter into a joint development and technology licensing agreement to implement Stardent's Application Visualization Software (AVS) on DEC's workstations.

AVS, a program for graphical and imaging techniques, allows end users to construct visualization programs using their own computational code, according to Stardent. Under the joint agreement, DEC will also have worldwide marketing and distribution rights to AVS on its products.

DEC and Manchester, N.H.-based **Coda, Inc.** announced their joint agreement to sell complete vertical market applications aimed at the financial accounting industry, according to DEC.

The agreement is part of DEC's Complimentary Software House program, set up to allow both companies to sell, service and support "total computing" vertical market applications, according to DEC.

Rockville, Md.-based **Raxco Software, Inc.** and **UIS Limited** of Epsom, England, announced that they have agreed to combine the interests of the two companies. Raxco and UIS are independent DEC VAX systems software developers, focusing on performance management and system management software.

Sybase unveils RDBMS tool for Stratus systems

EMERYVILLE, Calif. — Sybase, Inc. has introduced a symmetrical multiprocessing version of its relational database management system software for Stratus Computer, Inc. fault-tolerant computers.

The new software, based on the firm's Virtual Server architecture, will allow multiple copies of Sybase to interact on the Stratus computers. Previous versions of Sybase allowed only one copy of Sybase to be used on a multiprocessor machine. Also, earlier versions required that other CPUs act as clients to the Sybase server. The software went into beta-test sites last month.

"We're going to keep all the concepts of Sybase intact," said Berl Hartman, director of product marketing. "But user tasks will keep running until an event, such as a disk I/O, keeps it from running. There won't be any need to time-slice the tasks, as we did before."

Future versions of the symmetrical multiprocessing software will run on Digital Equipment Corp. VAX computers, as well as on Unix machines made by Pyramid Computer, Inc. and Sequent Computer Corp., according to Hartman. Sybase has run on Stratus computers for several years.

Ada code

CONTINUED FROM PAGE 31

However, when NASA looked at effective productivity — in which the benefit of reusable software is considered — results were dramatically different. According to Seidewitz, the Fortran systems were able to get on average only 20% of their code from earlier systems, even in cases in which the systems had as much as 60% to 80% overlapping functionality.

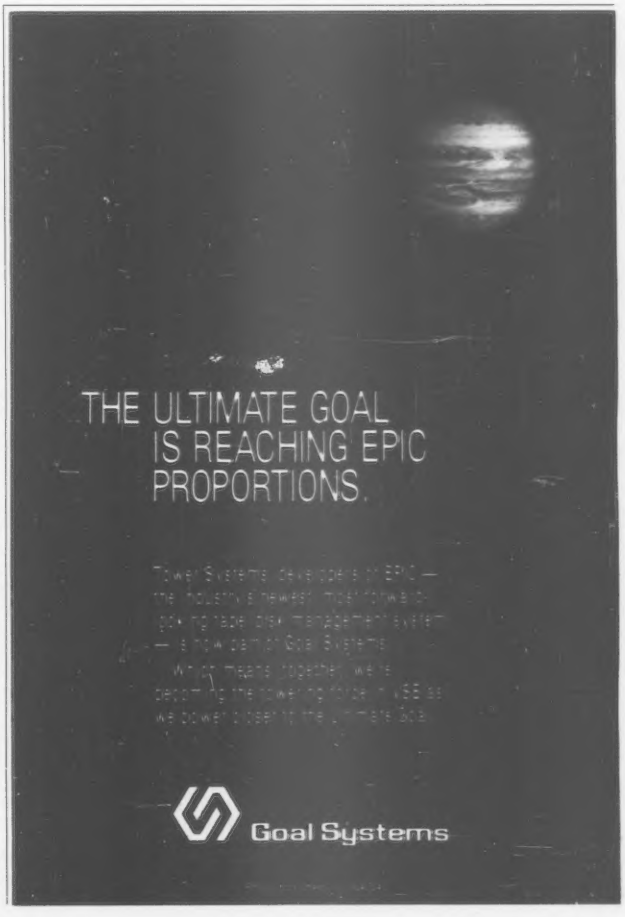
The Ada applications showed dramatic increases over time in the amounts of code they could borrow from earlier work. Ada allowed NASA to build a library of reusable software components that similar applications could draw from. NASA's figures suggested that one could expect to see a steady increase in leverage from the use of Ada if developing a series of systems with similar characteristics.

The key to Ada's leverage is the use of object-oriented design, for which Ada is especially well suited, Seidewitz said. In object-oriented design, programs are not structured along functional lines only but are built in discrete, self-contained packages of processing and data. The grouping of interdependencies makes it easier to reuse existing code, he said.

Seidewitz said the division's early use of Ada resulted in more errors than would have resulted from the use of Fortran, but the rates with later projects were similar. He added that Ada systems are easier to understand and hence should be less costly to maintain.

In production, Ada proved to be even more of a dog than NASA had expected. Seidewitz said he had expected the relatively immature Ada compilers to impose a 50% performance penalty, but initial runs of flight simulators were slower by factors of 10 to 20. After some tuning, they ran three to four times slower, and now NASA is using a 100% performance penalty as a planning factor.

Despite the mixed reviews, Seidewitz remained bullish on Ada, but he said organizations switching to the language need patience. They should expect it to take about three years of experience for programmers and analysts to become proficient in Ada, and they should allow much longer to make a complete transition. "You can't do a big bang approach. It will take us 10 years to replace Fortran in our division," he said.



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NEW PRODUCTS — SOFTWARE

System software

Multitrak Software Development Corp. has introduced a system designed to combine information systems service and maintenance activities under the heading of automated project management.

The Multitrak Work Request/Activity Initiation System provides software maintenance management within the framework of Multitrak, an enterprisewide IS project control system that enables IS managers to define, catalog and prioritize maintenance requests.

The system is licensed for $5,000 to $40,000 as an option to the Multitrak MIS Project Control System. The software runs on IBM mainframes with MVS/CICS.

Multitrak
108 Lincoln St.
Boston, Mass. 02111
617-482-6677

Computer Information Systems, Inc. has announced the release of Version 3.0 of Robomon, an automatic monitor for Digital Equipment Corp. VAX/VMS systems.

The product's reporting feature allows Robomon to automatically monitor a system and produce reports that are sent to systems managers each day. Other features include a report writer facility for performing detailed analysis, graphing or reporting of data; performance advising, which provides automatic investigation and reporting of system problems; and dynamic tuning for detecting changes in system work loads.

The software ranges in price from $750 to $20,000, depending on CPU size.

CIS
120 Wells Ave.
Newton, Mass. 02159
617-527-1550

Clyde Digital has announced Version 2.0 of Dialback, a computer security software program that runs on the Digital Equipment Corp. VAX/VMS operating system.

Dialback works with any autodial modem and intercepts dial-in users before they log on to the computer. If these users are authorized for access, the program calls them at a preassigned number and permits them to log on to the system. An encrypted authorization database prevents even privileged users from changing access codes.

Pricing per CPU ranges from $792 for Vaxstation versions to $3,036 for the VAX 750 and higher.

Clyde
371 E. 800 South
Orem, Utah 84058
801-224-5306

Database management systems

The Answer Systems Division of Sterling Software, Inc. has announced Microanswer II, a product designed to provide cooperative processing between mainframes and IBM-compatible PC-DOS workstations.

A mainframe-resident component (Answer/Extractor) runs on an IBM 370. The workstation component (Microanswer II) resides on an IBM-compatible PC-DOS workstation.

Microanswer II costs $200 per copy, per personal computer workstation. Pricing ranges from $30,000 to $50,000 for installation of Answer/Extractor on an S/370 mainframe.

Sterling
P.O. Box 9152
21050 Vanowen St.
Canoga Park, Calif. 91304
818-716-1616

Applications packages

Computer Associates International, Inc. has introduced a project estimation and guidance system for application development managers.

CA-Unipack/Pep consists of the following components: CA-Estimacs, a personal computer-based interactive tool that allows applications managers to assess the costs, risks and effort needed for a given project; CA-Planmacs, which includes knowledge-based automated planning capabilities; and CA-Superproject Expert, which uses data generated from CA-Planmacs to manage project implementation.

The product runs on IBM Personal Computers and compatibles and sells for $58,800.

CA
711 Stewart Ave.
Garden City, N.Y. 11530
516-227-3300

Utilities

Park Software, Inc. has announced that Xentis 3.5, a new version of its report writer and query system for Digital Equipment Corp. VAX/VMS systems, can interface with Ingres Corp. and Sybase, Inc.'s relational database management systems.

The product's screen consists of three sections: a top window that contains the format of a report being defined, a middle window that shows tables of valid responses and a bottom window that includes Xentis/Report, which provides a series of questions with intelligent defaults to facilitate report definition.

Pricing ranges from $2,000 to $15,000, depending on CPU size.

Park Software
P.O. Box 31529
Seattle, Wash. 98103
206-343-0447

Compilers

Language Systems Corp. has introduced a Digital Equipment Corp. VAX-compatible version of its Fortran Compiler.

Version 2.0 includes a code optimizer that accelerates execution of compiled programs, the vendor said. The product also features a scrollable output window with Font, Edit, Print and Save options and built-in diagnostics that enable users to trace the execution of a program by using Dump and Trace commands.

The compiler runs in Versions 2.02 and higher of the Apple Computer, Inc. Macintosh Programmer's Workshop (MPW) development environment.

Version 2.0 of the Fortran compiler, bundled with MPW 3.1, is available for $495.

Language Systems
441 Carlisle Drive
Herndon, Va. 22070
703-478-0181

NEW PRODUCTS — HARDWARE

Processors

Bull H. N. Information Systems, Inc. has introduced the Relational DBC System Model 386 relational database computer.

The system allows users to perform ad hoc data inquiries for Bull's DPS 8000, 90 and 9000 computers and can be used for corporate applications, including product trending, claims analysis and inventory/budget management, the vendor said.

Model 386 offers three to 1,024 parallel 386 processors, supports up to 4 terabytes of data and features 2.4M byte/sec. data transfer speed. Entry-level systems cost from $995,000 to $1,150,000, depending on configuration.

Bull
Technology Park
Billerica, Mass. 01821
508-294-6602

Data storage

System Industries, Inc. has introduced a two-drive desktop subsystem that provides 640M bytes of storage capacity for Digital Equipment Corp.'s Vaxstation 3100 and Decstation 3100 desktop computers.

The subsystem, part of the SI350 Model 1 series, can connect directly to the small computer systems interface port on the DEC systems without any hardware or software modification. It is made up of all necessary attachments, cabling, power supplies and enclosures, and its two-drive packaging enables the subsystem to provide up to 2G bytes of unattended backup, the vendor said.

The product is available in one- or two-drive configurations for a list price ranging from $5,000 to $9,000.

System Industries
P.O. Box 789
560 Cottonwood Drive
Milpitas, Calif. 95035
408-432-1212

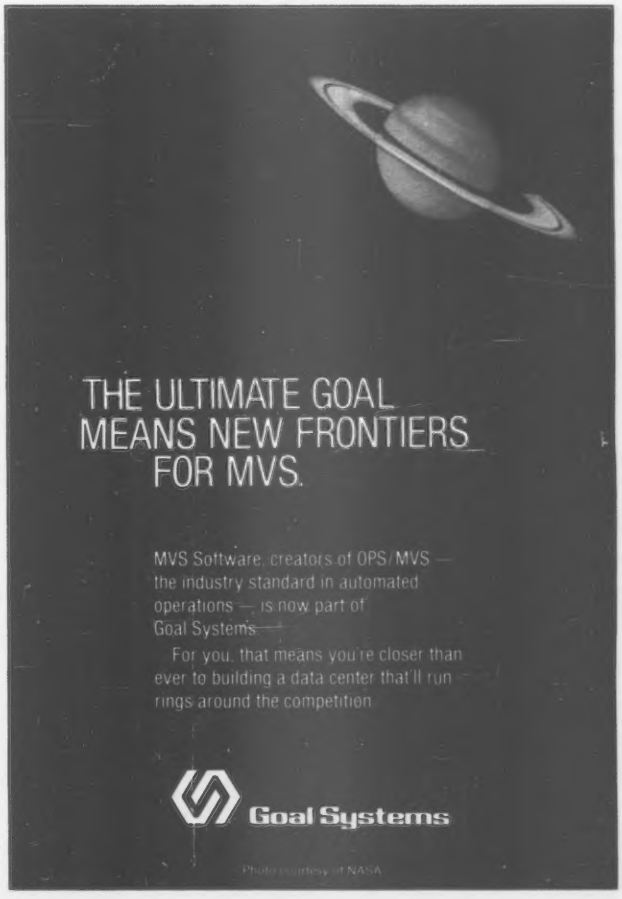
Maintenance equipment

Miniatacs, a test access system from Crosspoint Systems, Inc., was designed to provide vendor-independent circuit access and testing at small, unattended sites.

The system allows users to remotely monitor, test and diagnose RS-232, RS-449, EIA50 and T1 interfaces. The standalone, tabletop unit supports up to four interface cards, eight digital (RS-232, RS-449, EIA530, V.35) or T1 circuit interfaces. It also can support 64 two-wire circuits or a combination of digital, T1 or facility interfaces, the vendor said.

The system costs $1,500.

Crosspoint Systems
1200 Charleston Road
Mountain View, Calif. 94043
415-966-1911



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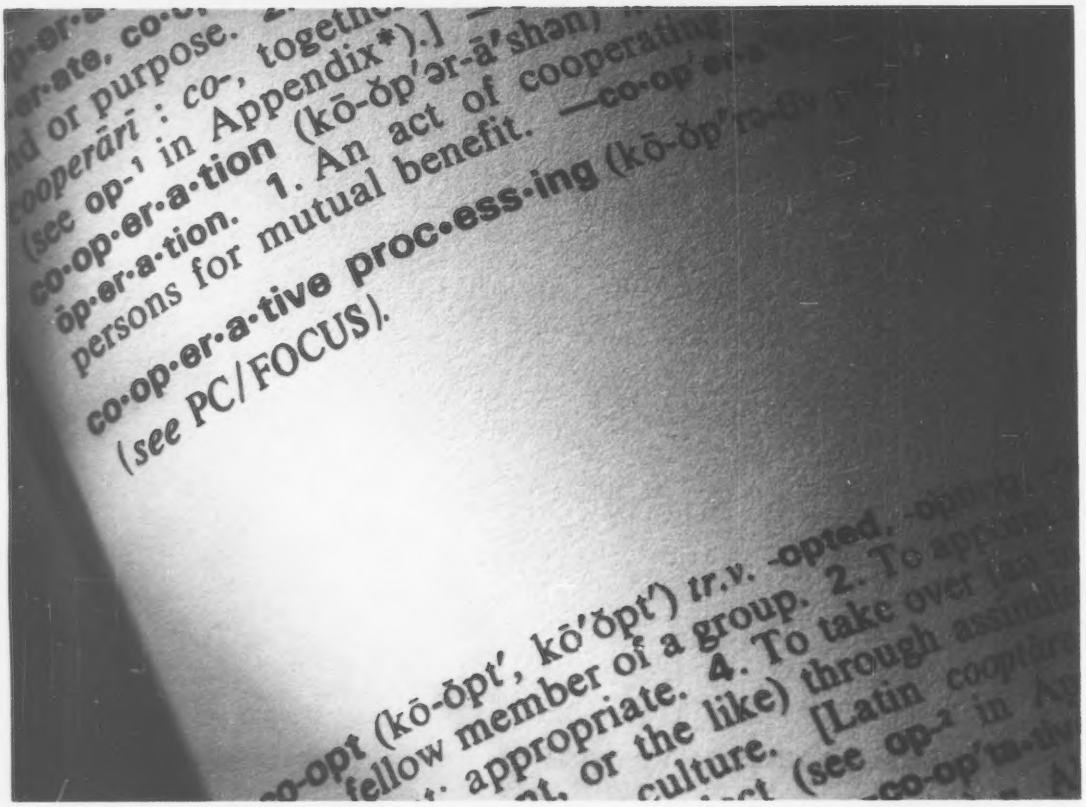

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MICRO BITS

James Daly

The Valley, or *Chinatown*?

Dueling gumshoes. It ain't exactly *Mannix*, but it's the best the Silicon Valley has to offer. Seems the Apple executive leading the investigation of the company's well-publicized security leaks claims he is being followed — and he's not too thrilled about it. Apple general counsel Edward Stead has filed a suit against Burlingame, Calif., investigator Joseph M. Melodia Jr. and Melodia's firm, Bay Side Investigations, seeking a restraining order that would bar Melodia, his employees and Bay Side from conducting a surveillance on him.

Stead claims he was followed one night as he left the Apple parking lot. According to court documents, he "drove evasively," but the pursuit did not let up. Next night, same scene, but this time Stead jotted down the license plate number of the persistent pursuer. The car reportedly belonged to a Bay Side employee. Melodia, according to court papers, declined to say who hired him.

Insert Tab A into Slot B. It used to be that the only way to

Continued on page 50

OS/2 then and now: How the tune changed

ANALYSIS

BY PATRICIA KEEFE
and CHARLES VON SIMSON
CW STAFF

The usual course is to be accused of looking at the past through rose-colored glasses. However, in the case of OS/2, a trip down memory lane reveals overly optimistic expectations and, in some cases, misplaced concerns.

There is irony in former Microsoft Corp. President Jon Shirley's June 1987 comment that "time could be of the essence in the fierce market for OS/2." Last week, Paul Maritz, Microsoft's vice-president of advanced operating systems, conceded that Microsoft's initial expectations for OS/2's success were incorrect and that its early optimism did not do anyone any favors.

After the April 2, 1987, unveiling, users took a calm, skeptical view from the start.

"It doesn't make sense for us to change for technology's sake," stated Bruce Johnson, then a personal computer manager at Deloitte Haskins & Sells in New York.

Proving that the more things change, the more they remain the same, Johnson had also noted that "there has to be some quantum improvement in the productivity or usability at the end-user level for us to want to make a change." That refrain echoes throughout the user ranks today.

A sidetrip back to 1985 finds then-IBM Personal Computer executive Bill Lowe in Boston, predicting that IBM's PC-DOS spin-off of MS-DOS would evolve into a multitasking operating system. Of course, both vendors are now touting OS/2 as the multitasking choice for the desktop of the future.

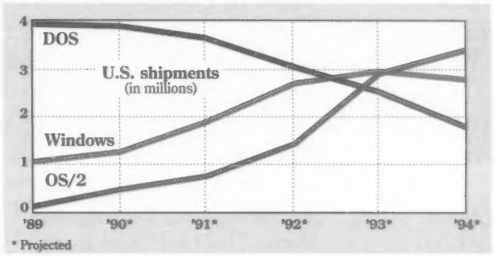
Also in late 1985, Microsoft argued that Xenix would serve as the primary multiuser operating system for personal computers. Last week, Maritz said that the Microsoft/Santa Cruz Operation desktop version of Unix is sold into a "specific" market, and so he does not see it affecting OS/2 migration.

Right on target, however, was an April 20, 1987, comment from Lee Reiswig, then systems

Continued on page 51

Long road ahead

It will be two years or more before U.S. shipments of OS/2 surpass DOS and then Windows



Source: Forrester Research, Inc. CW Chart: John York

Verity seeks busy executives with news-sifting software

BY RICHARD PASTORE
CW STAFF

Though some would argue that information filtering narrows knowledge horizons, many business executives might appreciate a screen that automatically alerts them to pertinent news and weeds out the rest.

That is the market Verity, Inc. is targeting with its Topic Real-Time software. Introduced late last month, the program analyzes and selectively routes online real-time information from news wires or electronic mail systems.

A user whose workstation is tied into an on-line service such as Business Wire could program the software to screen for specified topics — investments, competitors or federal legislation, for example. When the software hits a pertinent story, it alerts the user or prints the full text.

"Topic Real-Time enables individuals and organizations to stay informed, current and competitive," said Michael Pliner, Verity president. Verity is pitching the program to Fortune 1,000 service and industrial firms that have automated message handling, market research data collection, competitive analysis and other intelligence-gathering needs.

Rather than searching for keywords, the program draws on a user-built knowledge base to look for "topics."

Besides desktop hardware, Topic Real-Time can reside on a network file server and serve the individual needs of each user. The package supports all major network software, the company said. It runs on DOS, OS/2, Unix and Digital Equipment Corp. VMS-based hardware. Verity also announced that it will resell Dowvision, a 24-hour composite news service from Dow Jones & Co., with its own software as a turnkey package.

Topic Real-Time costs $695 for DOS-based desktop platforms and $1,000 for OS/2 and Unix workstations. Prices range from $15,600 to $150,000 for server platforms, depending on the number of nodes.

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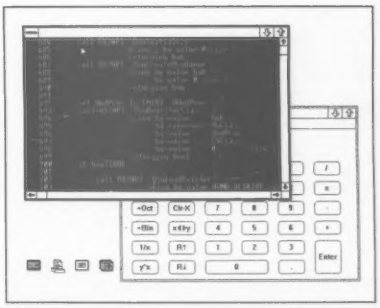

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Microman software fulfills its promise

Planning system lets the Pacific Stock Exchange give better customer service

ON SITE

BY CHARLES VON SIMSON
CW STAFF

SAN FRANCISCO — The ability to plan projects and schedule time and resources using a personal computer has at the same time been one of technology's great promises and failures.

In one tightly focused area, however, the Pacific Stock Exchange has done exactly that. The exchange purchased a software package to track systems development and internal customer commitments that information systems director John Parady had actually set out to build at one point.

"We needed something that would flexibly address the often complex MIS planning process, both from a systems perspective — the status of code in development — and the planning of the business aspects of personnel and resource management," Parady said.

Parady hired an outside contractor to work on the system, but the results were not what he and his staff had expected. "Several years later, we went looking again and found the current system," Parady said. "One of the company's executives explained to me that he had been on the original team of contractors and had believed the system would work. He and some others went back to the drawing board and got it running."

The result of that roundabout effort is the Microman IS planning system from POC-IT Management Services in Santa Monica, Calif. The PC-based project and staff management system includes facilities for tracking staff time and availability as well as detailed information on the status of IS projects.

The system has gotten strong marks from Parady and others within his organization, both for its functionality and its PC platform. "We looked at mainframe-based systems, and while they were comprehensive in scope, they are tough to use," said Ron Hogan, systems development manager at the Pacific Stock Exchange. "Plus, you have to wonder if you want to have people maintaining a mainframe system simply to do project scheduling."

Ray Vella

Hogan described the PC product as a good compromise, adding that the system is well designed, although it does offer significantly less performance on a PC. The Microman scheduler runs on IBM PCs or compatibles and requires 512K bytes of main memory and 4.5M bytes of hard disk drive space. The system can be configured for stand-alone or local-area network use.

One of the shortcomings of the PC approach, according to Hogan, is that while it does a good job with personnel scheduling, it does not address more sophisticated resource management issues such as CPU use.

The system is well suited, however, to tracking code development. "We have skeletons of projects loaded into the system and use that to track the progress of the code," Hogan said. "It allows us to get down to the task level. If we are programming, we can divide a project into individual projects as well as resources assigned to different programs."

Beside better planning, the system allows for better service of internal customers. "People are depending on a project in development, and their need is often time-sensitive," Parady said. "The better we are in tracking backlogs, the better we can serve our customers."

In addition, the system allows for the combination of several areas that were formerly tracked separately, which complicated the process of billing internal customers. "Before we had this, we did timing, cost allocation and reporting as separate functions," Hogan said. "Now when we cost-allocate all of our time with a set loaded rate loaded into the system, we can better allocate resources to other departments we are billing."

PC users bored with doing board upgrades

ANALYSIS

BY SALLY CUSACK
CW STAFF

Installing various boards and gizmos to make a personal computer run faster, communicate better and soar to higher levels of graphic resolution was once a routine task for many information services technicians. Perhaps no more, though.

Corporations may find it more practical from a monetary and maintenance perspective to purchase the more elaborate, feature-intensive personal computing platforms, such as the IBM Personal System/2, for their users as they enter the 1990s.

"We felt the PS/2 would satisfy our needs in most cases," said John Callahan, manager of systems planning at Borden, Inc. in Columbus, Ohio. Borden has more than 1,000 PC users, he noted; most of them are operating a PS/2, but there are some older systems scattered throughout the organization.

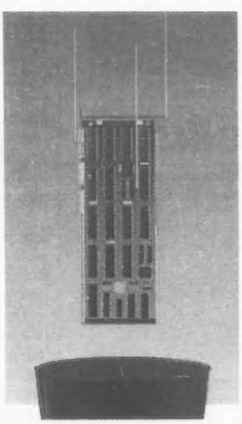
"I get very few requests for add-in cards. Once in a while, someone will need more memory for a spreadsheet application, but that's about it," Callahan said. "Of course, up until the [small computer systems interface] was announced, we had to have emulation adapter boards and modem cards."

As more and more applications are requiring some level of graphics capability from the PC, graphics adapters are becoming standard in many microcomputing platforms.

International Data Corp. (IDC), a Framingham, Mass.-based market research firm, estimated the installed base of IBM Video Graphics Array (VGA) boards at more than seven million and projects it to climb to more than 20 million by 1994.

Joan-Carol Brigham, an IDC analyst, estimated that 95% of bulk Intel Corp. 80386-based system purchases now include VGA boards and ventured that memory is more often the reason for purchasing any type of upgrade nowadays.

Though the migration path to the PS/2 is natural for most IBM PC users, the cost of upgrading



an older system must be weighed against purchasing a new platform. With VGA cards costing an average of $250, and graphics monitors ranging upwards of $500, it is becoming more cost-effective for businesses to buy into a VGA platform from the start.

Such is the case at the Central Illinois Light Co. in Peoria. According to Mary Culpepper, the company's technical administrator, the company has 300 PCs, half of which are PS/2s. The company has not purchased any boards since IBM started delivering the PS/2 in 1987. Prior to that, the company had invested in some AST Research, Inc. memory boards for its PC XTs, ATs and PC 5150s.

THOUGH the migration path to the PS/2 is natural for most IBM PC users, the cost of upgrading an older system must be weighed against purchasing a new platform.

"We're not planning on purchasing any additional cards for the older models," Culpepper said, adding that they will be replaced with the PS/2 when the time comes. "We like the Micro Channel Architecture, and we also like to standardize for maintenance purposes."

Tom Casey, a senior computer consultant employed by New York Life Insurance Co., said the firm started upgrading to the PS/2 platform as soon as it was announced. He conservatively estimated that there are 6,000 PC users scattered throughout his organization.

"We kept some of our old PC XTs for word processing purposes, and we provide upgrade cards for a few people who are really attached to their older boxes, but when you consider the total cost of upgrading an older system against the price of the PS/2, it's better to spend the extra thousand dollars and get the newer machine," Casey said.

1-2-3 for VAX/VMS, Sun Datalens kit ship

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — Lotus Development Corp. bustled about two weeks ago announcing Phase II of its first-quarter product introduction blitz — product delivery of 1-2-3 for VAX/VMS and Datalens Developer Toolkit for Sun. At the same time, Lotus launched an assault on the lower end of the accounting market.

Announced in March, Lotus' spreadsheet for Digital Equipment Corp.'s VMS environment can be used on all VAX family members, from the single-user Vaxstation to a VAX 9000. Pricing ranges from $795 to $67,473. "[DEC] has already booked orders in excess of $1 million," claimed Frank Moss, vice-president of Lotus' new Consulting Services Group.

Time saver

Beta-test user COM Energy Services in Cambridge, Mass., has found that a utilities rate analysis program written on the personal computer runs on the VAX with virtually no changes. It also saves time, according to MIS manager Dan Joyce. It used to take three people eight hours to produce a service report on Intel Corp. 80286- and 80386-based computers and more than an hour to print it. Now, it takes one person one hour to produce the report and 10 minutes to print it, Joyce said.

"This is an enormous help because state regulators often make regulatory changes only hours before bills are issued," he said, adding that he now has the time to update the model and incorporate those changes into customers' monthly bills.

Lotus also announced the shipment of the Datalens Developer Toolkit for Sun, priced at $250. It is a set of programming tools said to allow developers to build links between their data sources and 1-2-3 for Sun, a family of spreadsheets for Sun Microsystems, Inc.'s three computing platforms.

The Department of Laboratory Medicine at the University of California is using the tool kit to build a grant-planning model. Brian Colfer, a department programmer analyst, uses 1-2-3 for Sun to perform immunological research and drug cost comparisons in support of acquired immune deficiency syndrome research. He also uses the spreadsheet for managing grant requests and allocating funds.

Colfer is using the Datalens Toolkit to build a driver linking his spreadsheets to a database containing grant funding. He said the tool kit provides easy access to data, great flexibility and the opportunity to create an easy, familiar mechanism for accessing data across the network.

Drivers are currently under development for 1-2-3 for database products from Sybase, Inc., Autodesk, Inc., Ingres Corp., Microrim Corp., Oracle Corp. and Unify Corp.

In a separate announcement last week, Lotus joined with Great American Software Co. to co-market Financial Manager, an accounting and financial software package targeted at small businesses.

Daly

CONTINUED FROM PAGE 47

own an inexpensive Macintosh was to commit a felony. Since tinkerer Bill Brant probably looks less than dashing in prison stripes, he came up with an alternative.

He published *Building Your Own Macintosh From Catalog Parts — The CAT Mac.* In it, he describes how to assemble a Macintosh facsimile from new catalog parts, saving 50% over the cost of a new machine. The key, Brant says, is to purchase the Mac SE logic board for around $1,650. His book also includes lengthy discourses on how to upgrade your present Mac.

Remember, with a "Hackintosh," there is no warranty, minimal resale value and — depending on your hardware skills — no guarantee that it will work at all. If you're still interested, you can order the $24.95 book from Brant Associates, P.O. Box 68708, 4420 S.E. Mark Kelly Court, Portland, Ore. 97267.

Sue me, sue you blues. The future of cross-licensing agreements, once seen as one of the most valuable ways to lighten the bloated cost of research and development, is becoming a big fat question mark these days.

One only needs to look as far as the courtrooms of Austin or San Francisco to see former allies clobbering each other under the guise of jurisprudence. Both the Motorola-Hitachi and Intel-Advanced Micro Devices lawsuits resulted from technology-swapping arrangements gone sour. The latter pair are also locked in private arbitration over rights to Intel's 80386 chip.

Year of the Sparcstation. Ever see a glacier move? Not likely, unless your hands drag on the ground and you're about 10,000 years old. But take a look at Sun Microsystems and you'll see the next best thing — a company doing an almost complete reversal. Since introducing its reduced instruction set computing Sparcstation last April, Sun has spun its product line so that now Scalable Processor Architecture (Sparc)-based computers account for 95% of the company's revenue.

Despite the impressive shifting of gears, President Scott McNealy once again seems to be playing fast and loose with numbers. In Sun's financials, his assertation that about 300 applications will be porting ("porting," as in "still in the process of . . . " is the operative word here) to the Sun and AT&T-sponsored Open Look graphical user interface by midyear is correct by only the slimmest of technicalities.

How many Open Look applications are available today? "About 12," an AT&T spokesman said. The rest are under development, added a Sun staffer. Yup, and one day we'll have colonies on Mars.

Workers of the world unite, or at least let's go out for coffee. Apple employees are crabbing about their new tighter profit-sharing plan, which is tied into increased earnings rather than increased sales. In one San Francisco newspaper, a worker accused Apple of "becoming just another Fortune 500 capitalist machine." If the shoe fits . . .

Billion-dollar windfall. OK, so the hype for multimedia has you yanking out your already thinning hair. But consider this side effect: The emergence of multimedia applications could result in the injection of up to $20 billion in the domestic hardware and software markets by 1994, according to Inteco, a Norwalk, Conn.-based research firm. Sounds good, but if the multimedia gurus could just show us a little more than an on-screen head whose mouth moves, they'd be doing something.

Daly is a *Computerworld* West Coast senior correspondent.

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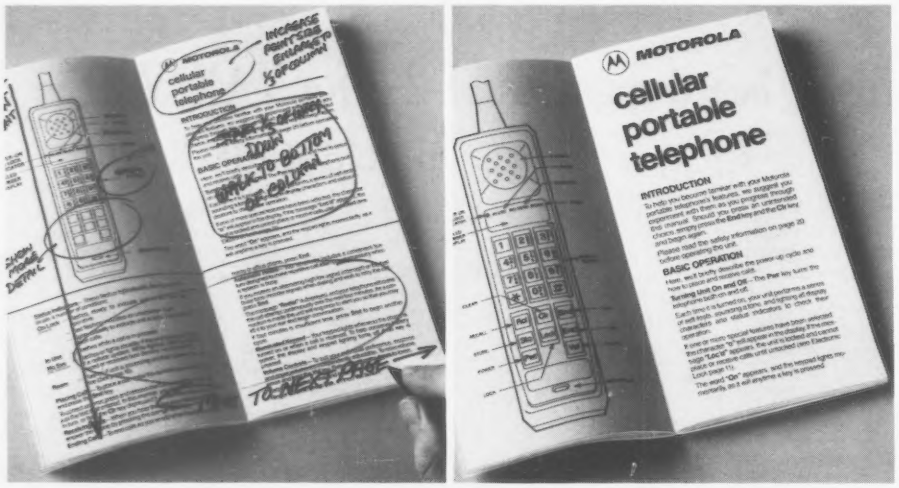

Motorola wrote the book on cellular phones. A Xerox system lets them rewrite it in minutes.

Motorola is the world's largest producer of cellular phones. Not to mention cellular phone manuals. For which they turn to a company called Rich Graphics.

But when Motorola decided they wanted to be able to revise and reprint their manuals on a "just-in-time" production schedule, Rich Graphics turned to Xerox.

Working with Rich Graphics, Xerox developed a solution that integrated both hardware and software, Xerox products and other suppliers' products. And the resulting phone manual production is something to talk about—to say the least.

The manuals are now printed on Xerox laser printers just minutes after the revisions flash across the screen of a Xerox workstation. Turnaround time is 80% faster. Costs are down 50%. And the documents produced are 99.99966% perfect.

Of course, Motorola isn't the only client that Rich Graphics uses Xerox for. And the resulting improvement in customer satisfaction has helped Rich Graphics *double* their printing business every year since they came to Xerox.

Which just goes to show that a partnership with Xerox can also help a company rewrite its bottom line.

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Ontologic plugs into OS/2 arena

BURLINGTON, Mass. — Ontologic, Inc. recently introduced the OS/2 version of its object-oriented database management system, which can store both text and graphics in the same file.

The product, called Ontos, is scheduled to ship in June. It is written in the C++ language but also has an SQL interface to support access and compatibility with existing programs, according to Robert Martin, Ontologic's vice-president of products.

Designed to run 10 times faster than a relational database, Ontos also features independent object identification, clustering, caching and an extensible, open database, according to Seaforth Lyle, Ontologic's president and chief executive officer.

The independent object identification allows a user to incrementally add data independently of any other data, Martin said. The clustering feature allows the user to attach files or a portion thereof. The caching capability stores a file in real-time but can also keep a copy of the original file prior to changes, in case the user wants to start from the beginning without rewriting the entire program, Martin said.

Security features for Ontos, which could be a major issue for such a product, are still being worked out, Martin said. Ontos is slated for availability on other platforms by the end of the year.

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Imaging users long for low-end upgrade path

BY ELLIS BOOKER
CW STAFF

Armed with little more than a scanner, a personal computer and software, some users have already added images to their database applications.

"The market for PC-based, networked [imaging] systems was worth about $200 million last year," said Dick Fisher, vice-president and general manager of Rothchild Consultants in San Francisco. He said this low end of the market is represented by systems costing $75,000 for a two- or three-PC network to $1 million for a 30-workstation system with a small optical disc jukebox.

Such low-end systems make imaging relatively affordable for small groups and departments and have the strong selling point of protecting a customer's investment in MS-DOS-based systems. Higher-end systems typically employ higher-performance workstations and Unix or mainframe servers for the image database.

But some analysts caution that these systems may not meet the needs of transaction-intensive applications or successfully link to mainframe resources. Even so, Fisher said, it is significant that low-end systems are generally marketed by resellers.

"There are probably 300 or more resellers marketing these small systems," he said, arguing that, for this reason, the low-end imaging market will grow perhaps as much as 100% annually for the next couple of years.

Timothy Watanabe, a utility management assistant at the Los Angeles Department of Water and Power, is using a 2-year-old stand-alone Laserfiche system from Compulink Management Center, Inc. in Torrance, Calif.

One of Compulink's first customers, the agency bought its $55,000 system to handle the several thousand documents involved in a $24 million water litigation case that Watanabe's tiny department had to handle without adding staff. The utility has since bought a second system and has a third on order, Watanabe said.

However, how well such small systems can grow in size and scope to accommodate enterprisewide applications — or link with other imaging applications within the company — is a persistent worry to corporate users, analysts said.

"Generally, these systems don't have the level or breadth of integration with mainframe applications that customers need," said Roger Sullivan, vice-president of Norwell, Mass.-based BIS CAP International, Inc.'s image management systems consulting and research services.

"If customers could start with a $100,000 system today and grow to a $1 million system tomorrow, they'd jump on it," Sullivan said.

Hearing of this need, a number of vendors of PC-based systems are working to add options, such as Unix-server support and integrated mainframe databases through IBM 3270 emulation, that will make them attractive to larger customers.

Viewstar Corp. in Emeryville, Calif., for example, says that its systems can already link to an IBM DB2 mainframe database through a 3270 emulation window. An application programming interface, which is now in use at many of Viewstar's installations but is not yet a commercial product, can be used to create links between fields in the mainframe database and images contained on the optical server, marketing manager Gillian Webster said.

Founded in 1986, Viewstar now claims about 35 installations for its systems, which support 30 to 100 workstations. However, keeping to its belief that customers wish to protect their existing investments in PCs and networks, Viewstar last month entered a partnership with Novell, Inc. to provide optical disc services for Novell's Netware 386. Viewstar already supports a number of IBM Netbios-compatible local-area network products, including Novell's.

Likewise, Viewstar and other vendors at the recent Association for Information and Image Management show in Chicago said they were planning or at least considering a move to support Unix servers.

OS/2

FROM PAGE 47

manager for the communication and data management group of IBM's Entry Systems Division, that a true multiuser system was "perhaps years off." Three years after OS/2's introduction, multiuser capability is still not available.

One unnamed developer scored a bull's-eye with this lament: "Most users don't care about OS/2 right now. For them it comes down to multitasking in a slower environment or more speed with what they have under DOS. Ninety percent of customers prefer the latter" — hence the market for Windows.

Some early concerns over technical issues were also off the mark. For example, there was once much discussion about IBM's Personal System/2 line, which was supposed to showcase OS/2, requiring users to change from 5¼-in. to 3½-in. disks. Concerns have since shifted to preserving the DOS investment, finding suitable OS/2 applications and the cost of migration.

Nor was Unix much of an issue right off. "Unix is fairly well entrenched as a multiuser operating system in the midrange, and even an operating system like OS/2 would have a hard time competing in that niche," said Steve Ballmer, vice-president of systems software at Microsoft, in 1987.

Today, many analysts are forecasting a head-on collision between OS/2 and Unix, particularly on the server side.

Also back in the shadows of 1987, the stage was set for a sometimes touchy relationship with the developer community that still endures. For example, Microsoft's early claims that Windows would be largely compatible with OS/2 have so far been untrue.

"Microsoft said that if you develop for Windows, it would simply be a recompile to work under OS/2," said Mark Finger, systems engineer for Innovative Software, which was developing Windows applications in May 1987. "They came back last month and said 'Oops.' "

Three years later, Microsoft has rushed out a potential fix. "Porthole" is said to ease migration of Windows programs to OS/2.

These days, OS/2 developers are venting their spleens in anger over the upcoming Windows 3.0, which they feel too closely mimics OS/2's look and feel.

Then there is the slenderizing of OS/2. Shortly after announcing plans for a 2M-byte client version of OS/2 at Comdex/Fall '89, IBM and Microsoft began to back away.

"We are trying to squeeze OS/2 down, but right now we can't commit to a 2M version," said Peter Neupert, senior general manager for OS/2. "This is not without its compromises," Ballmer added.

Finally, Microsoft and IBM had settled on a year-end 1990 ship date for the 32-bit OS/2 Version 2.0. However, "Right now, it is a toss-up; it could go either way," Neupert said. Maritz was more direct: He said OEMs won't ship OS/2 1.2 until early summer, so users won't get 2.0 until early 1991.

A briefing held last week was expected to shed more light on a ship date for Version 2.0.

NEW PRODUCTS

Development tools

Pinnacle Publishing, Inc. has announced plans to ship a charting and graphing extension for Microsoft Corp. Windows 2.1 and higher versions next month.

Graphics Server provides 12 different graph types, including three-dimensional pie and bar charts, and supports all Windows applications. It also includes the Graphics Server SDK development kit and interfaces to Microsoft's Excel, Superbase 4 and Word for Windows.

A copy of Graphics Server is needed for each copy of Windows, but runtime versions for a particular application can be purchased in large volumes for $5 per copy, the vendor said.

List price is $149; site licenses are available. Graphics Server SDK is priced at $495.

Pinnacle
P.O. Box 8099
Federal Way, Wash. 98003
800-231-1293

Systems

Mobius Computer Corp. has announced a series of Intel Corp. I486-based 25-MHz personal Unix workstations.

Model PWS/425, part of the Mobius Protege series of personal Unix workstations, runs Unix Version 3.2, which was developed by Interactive Systems, Inc., and is equipped with X Window System Version 11.3. It offers 1,024-by-768 pixel resolution and features a proprietary burst mode that doubles CPU-to-memory speed, the vendor said.

The PWS/425 workstation sells for $7,995. A Mobius graphics system costs $3,995. Model PWS/425C comes bundled with the graphics system for $9,995.

Mobius
1717 Embarcadero Road
Palo Alto, Calif. 94303
415-493-7777

Mobius Computer's *I486-based Unix workstation*

Software utilities

Insight Development Corp. has announced two software products designed for Hewlett-Packard Co.'s Laserjet III laser printer.

For single users of Apple Computer, Inc.'s Macintosh, HP and Insight will offer Macprint, a printer utility software package that provides seamless connectivity between Macintosh computers and HP or compatible PCL-based printers.

Lasercontrol is a device management software program for IBM Personal Computers and compatibles. It enables software packages that do not support laser printing to support the HP Laserjet III, according to the company.

Both products are available for a list price of $149.

Insight
Suite 500
2200 Powell St.
Emeryville, Calif. 94608
415-652-4115

Software applications packages

Timeslips Corp. has announced a memory-resident personal computer program that analyzes time- and money-related transactions.

Percentedge provides four areas for financial analysis: amortizations, mortgages, present-value calculations and variable-rate transactions, according to the company.

The program requires an IBM PC, XT, AT, Personal System/2 or compatible with a minimum of 320K bytes of memory and a floppy or hard drive.

Memory-resident programs need a hard drive and either 320K bytes of expanded memory or a 320K-byte random-access memory disk, the vendor said.

The list price for Percentedge is $100.

Timeslips
239 Western Ave.
Essex, Mass. 01929
508-768-7660

TGR Software, Inc. has announced an enhanced version of SCUA Plus, its system administration package for personal computers.

SCUA Plus 4.0 provides security for data transferred to a PC's hard disk from a secure host's environment and extends access security to host-connected PCs.

The product integrates functions such as a selective security feature that limits authorized PC users to obtaining access to only the information they need. Local-area network compatibility, audit trails and virus protection are also provided.

Pricing ranges from $6,000 to $90,000, depending on volume.

TGR
Two Ravina Drive
Atlanta, Ga. 30346
404-390-7450

Macintosh products

Aldus Corp. has announced an updated version of its desktop publishing program, Aldus Pagemaker 4.0, for the Apple Computer, Inc. Macintosh.

The amended program offers a story editor, text controls and in-line graphics, a feature that links graphics to their corresponding text as editing occurs. A links management feature alerts users to changes made to text or graphics files placed in a Pagemaker layout.

Pagemaker 4.0 supports Quickdraw- and Postscript-compatible printers and is scheduled to begin shipping in the second quarter of 1990. The suggested retail price is $795.

Aldus
411 First Ave. South
Seattle, Wash. 98104
206-628-6594

C-Cube Microsystems, Inc. has introduced the C-Cube Compression Workshop, a software version of the CL550 digital image compression processor, which was designed for OEMs, application software developers and graphic artists.

The product implements the CCITT/ISO's proposed baseline Joint Photographic Experts Group standard and supports proposed extensions to the Tag Image File Format.

It runs on Apple Computer, Inc. Macintosh II computers. Future versions will be available for DOS-based computers and OS/2 operating systems, the vendor said.

Compression Workshop sells for $500.

C-Cube
399A W. Trimble Road
San Jose, Calif. 95134
408-944-6300

Catalyst, Inc. has announced a software package that enables users of Apple Computer, Inc. Macintosh II computers to automate process engineering techniques.

Catalyst/RPE automates each phase of a process study. A graphic interface provides mathematical routines that determine the required number of test runs, design specific runs to fit each process, fit a mathematical model to data and find production conditions that optimize the value of future output.

The product is available for licensing to manufacturing and product development sites. Annual fees range from $15,000 to $100,000, depending on site size.

Catalyst
410 Great Road
Littleton, Mass. 01460
508-486-9800

Visual Business Systems, Inc. has announced the Professional Output Manager-Desktop PS1, a software package for use in high-resolution imaging with Apple Computer, Inc. Macintosh II graphics programs.

The utility program functions as a driver for graphics programs to specialized imaging or printing devices. It simultaneously provides graphics professionals with the ability to preview images via an electronic light box, arrange and rearrange the images and schedule imaging or output for unattended operation, the vendor said.

Professional Output Manager-Desktop PS1 sells for $595.

VBS
Suite 190
380 Interstate North
Atlanta, Ga. 30339
404-956-0325

DATA STREAM

Elisabeth Horwitt

Reaping the fruits of a union

Enough time has gone by for us to revisit some of the networking industry's more notable mergers and acquisitions of a year or two ago to see how the partners have been making out. Has there been synergy or entropy between people and product lines? The retrospective seems particularly timely, given the recent Novell/Lotus amalgamation, which Novell stockholders at least (and a few Novell users) regard as a catastrophe.

A cursory look tells us that in too many cases, the acquirer follows a "merge and purge" policy and treats the acquiree more as a possession than a partner.

I've been hearing tales of woe about takeovers that drove the acquiree's best and brightest out into the night — or into the arms of competitors. The impression given was that they were not fired but that they felt their talents were unappreciated and underutilized in the new corporate environment.

For example, Orion reportedly lost most of its best Systems Network Architecture (SNA) people when Apple acquired it, because of culture clash. This leaves Apple with the LU6.2 and T2.1 software products it wanted from Orion but without the expertise to support those products. This must be causing some customer headaches, since peer-to-peer SNA is not something you put together by following the instruction manual. Even IBM service people have admitted they needed a pretty long learning curve to do it right.

Orion is not the only SNA company that seems to have lost its feist along with its independence. I hear very little about Communications Solutions, Inc. (CSI) since it became part of 3Com. Prior to its acquisition, CSI was doing great things with linking various vendors' systems to IBM's SNA environment.

Continued on page 56

Routing shifts into user hands

AT&T option will benefit Accumaster Services Workstation customers

BY ELLIS BOOKER
CW STAFF

Public networks are starting to resemble private ones more and more, as long-distance and local exchange carriers provide tools for customers to monitor and even reconfigure their own traffic and services.

This month, AT&T will take a step in that direction when it offers an option for its 800 and 900 customers, enabling them to make routing changes in as little as five minutes.

The option for AT&T's Accumaster Services Workstation — now based on AT&T's 6386 AT&T Workgroup System computer and to be implemented later this year on a Sun Microsystems, Inc. Sparcstation — is a faster way of reconfiguring services through AT&T's Routing Control Services Personal Computer Interface, which has been available since 1984.

Previously, users had to update routing tables on-line. The new system permits multiple tables to be created off-line and then uploaded in batch.

However, AT&T officials were coy when asked whether the Services Workstation would be applied to other AT&T network services.

"That's a reasonable assumption, but I can't tell you what's next in the queue," said Pete Webster, product marketing manager for 800 service. Webster added that only a top portion of AT&T's customer base would require the features of the workstation. He also noted that the workstation is itself a part of AT&T's Unified Network Management Architecture and could conceivably be used as part of an enterprisewide network management scheme through the Accumaster Integrator.

How it works

In operation, a user signs on to AT&T's network, keys in the routing change, receives validation from an AT&T network control computer and logs off. The request is automatically forwarded to the Network Control Point (NCP) databases throughout AT&T's network. Users can also configure services dynamically, so that 800 calls are routed to different points depending on the time of day or day of week.

However, the workstation does not offer dynamic routing of traffic based on network events, such as the loss of a link. Automatic rerouting tops the wish list of many users, Webster conceded, "but we're not there . . . it's out in the future."

About a dozen AT&T 800 customers have tested the workstation. One of these early users is Fidelity Investments in Boston.

Assistant Vice-President for National Telephone Operations Peter Armstrong said the speed of the system is its biggest benefit. He said routing changes for the 20 800 lines now on the system are eight times faster than earlier mechanisms.

Prices for the workstation range from $9,000 to $13,000. When the Unix-based Sparcstation platform running the Open Look graphical user interface is added in October, AT&T said, customers will be able to view alarms and report trouble or orders directly to AT&T.

In the fourth quarter, AT&T promised to add more features, including the ability to monitor Megacom 800 traffic on-line, a way to allocate the percentage of 800 calls split to more than one location and on-line call detail reports showing the time, duration and phone number of the caller within 72 hours. Prices for the Sparcstation implementation will range from $18,000 to $22,000.

AT&T is not alone in giving

Continued on page 56

PREVIOUSLY, USERS HAD to update routing tables on-line. The new system permits multiple tables to be created off-line and then uploaded in batch.

Case Western switches to Sonet fiber network

ON SITE

BY JOANIE M. WEXLER
CW STAFF

CLEVELAND — It won't be long before Case Western Reserve University art students writing term papers on their personal computers will be able to "stroll" through The Louvre in Paris while accessing library resources and running a word processing program.

To pave the way for students and faculty to simultaneously access a variety of voice, data, imaging and video services in multiple windows on their PCs, Case Western is installing fiber cabling that brings the high-bandwidth medium directly to the desktop.

The first phase of the installation — running fiber to the residence halls — is complete and was handled by TRW, Inc.'s Information Networks Division.

Surprisingly, the university's plans are not to upgrade its current Ethernet fiber backbone to the 100M bit/sec. Fiber Distributed Data Interface (FDDI) — the university considers it "too slow" for the job — but to use Synchronous Optical Network (Sonet), a set of emerging standards allowing vendors' high-speed communications equipment to interoperate over fiber.

According to the university, its Sonet backbone will initially run at 250M bit/sec. and could increase to speeds of greater than 2G bit/sec. The Sonet backbone is slated to be in place by August. Sonet products are primarily intended for telephone company central offices, but Case Western intends to install the equipment on its own premises and create a metropolitan-area network.

Director of information network services Dell Klingensmith explained that Sonet equipment "ships huge clusters of digital voice, data and other services over the backbone, then breaks the transmissions out over FDDI, token-ring and Ethernet local-area networks."

Case Western does plan to install FDDI LANs. FDDI, which is 10 times faster than Ethernet, has generally been used to interconnect slower speed networks. Direct attachments to the fiber ring have been avoided largely because of prohibitive costs.

According to Klingensmith, the costs should start to drop this year, partly because FDDI standards are reaching maturity. The final component of the FDDI standard, Station Management, was approved last month by the American National Standards Institute's XT39.5 committee.

He said he keeps the relative costs of materials, electronics and labor in perspective when making decisions about shifting the network.

"Since labor for cabling — the most expensive component of installing the network — increases over time, you only want to do that once," he said. "But the cost of electronic devices decreases over time. So we buy the electronic devices we can afford now and swap them out as costs fall and technology advances."

Currently, the university is using 800 Cabletron Systems, Inc. Desktop Network Interface cards to attach workstations in residence halls and the law school and several educational departments to star-configured fiber Ethernets that terminate in a satellite equipment room. The interface cards support both Apple Computer, Inc. Macintosh and IBM platforms.

The Cabletron interface cards were chosen largely because they offer a level of intelligence for network management that competing products do not, Klingensmith said.

Ultimately, all 2,800 undergraduates, 7,000 graduate students and faculty and staff housed in 85 buildings will be able to share resources through the fiber network, Klingensmith said. The $2.8 million network consists of about 600 miles of fiber cable.

The premises wiring runs from wall-mounted face plates to a satellite equipment room. The face plates support multimode and single-mode fiber as well as coaxial and twisted-pair cabling. Twisted-pair is being used for voice and coaxial for video until fiber becomes a cost-effective medium for those applications.

"We could be doing voice over fiber right now, but who wants to spend $1,000 for a phone?" Klingensmith explained.

"Similarly, the cost of running video over fiber is exceptional, so for now, we'll run our video over coax," he added.

Freighter plays electronic tag

ON SITE

BY JAMES DALY
CW STAFF

SEATTLE — The low murky clouds boiling over Puget Sound have turned the capital of the Pacific Northwest into a study in gray. A few miles south of town, where choppy waters batter rhythmically against Pier 5, neatly stacked rows of truck-size marine shipping containers offer the lone refuge for a color-starved eye.

Hundreds of red, yellow, green and orange rectangles fill the waterfront shipping yard of the American President Companies (APC), their pattern shifting continually as forklifts load outgoing containers into ocean-going vessels while a steady stream of arriving trucks haul in new freight. Keeping track of this seemingly perambulatory cargo is an inventory control manager's nightmare.

Deep within the yard, however, a technology — termed the Automatic Equipment Identification (AEI) system — is being implemented that can pinpoint the location and contents of any of the nomadic containers in a matter of minutes. The system uses the same method naturalists use to track wild animals that have been captured and released: electronic tags.

AEI is part of a 15-month, $1.8 million joint project involving Digital Equipment Corp. and Amtech Corp., an electronic tagging firm based in Dallas that is attempting to standardize remote radio tagging techniques throughout the shipping industry. Already, several vendors, including IBM, are jockeying to get established in the potentially lucrative business.

Sweeping changes

APC's goal during this test phase at the yard is to attain just-in-time inventory management, eventually linking the system to customer databases through electronic data interchange. If the system is ultimately installed at APC sites worldwide, it could change the way the $2 billion firm does business. "It could result in sweeping changes in the way we manage our resources," said Gregory Kimball, director of applications development at APC.

The keys to the system are the electronic tags riveted onto the sides of shipping containers. The tags are slightly larger than a blackboard eraser and are encoded with information unique to the container's height, length, width and gross weight. A driver entering the yard stops beside a pole containing a receiver that "reads" this information off the tag and feeds it into the host computer. Formerly, the information was conveyed by yelling into a crackling intercom to a clerk who manually entered the information.

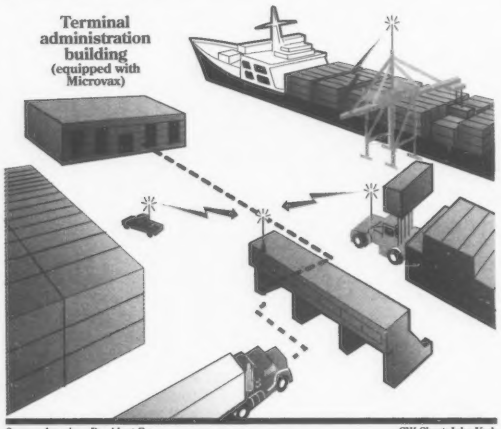
Additionally, two roaming pickup trucks with on-board DEC Microvax 3100s wend their way between the dozens of aisles of containers to keep tabs on yard inventory. Previously, a yard would close once a week for at least one shift so that workers could manually record the position and identification of all equipment within the yard.

Now, all the data is transmitted via radio to a DEC workstation in the terminal administration building. The information gathered in Seattle is transmitted via a 1.5M bit/sec. T1 line that runs to an IBM 3090 at the company's data center in San Mateo, Calif. There, the data is used to keep track of APC's worldwide distribution of cargo and equipment.

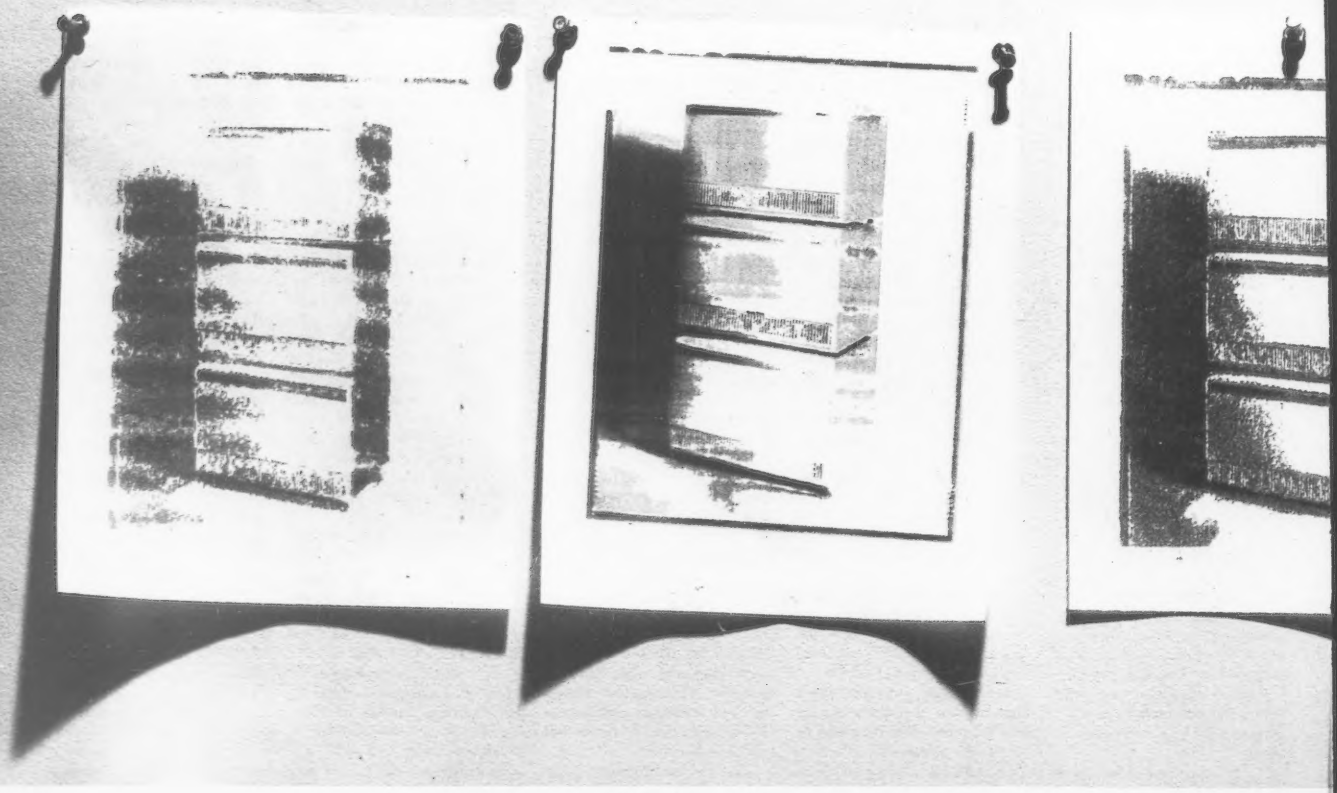
In this way, Kimball said, an inventory system that once took 24 hours to capture 80% of the information can now collect data instantaneously, with 100% accuracy.

A four-month evaluation phase has just been wrapped up, and if the system fulfills its early promise, it could be expanded to APC sites worldwide. As yet, only about 6,000 of the firm's 150,000 containers have been tagged. "We're looking at this yard as a test case," said JuleAnn Weidenholtz, senior project manager at APC. "If we're successful, we hope to take this to all our rail and trucking operations. We're excited about its potential."

Ocean container terminal



Source: American President Cos. CW Chart: John York



New products to bolster ISDN

BY ELISABETH HORWITT
CW STAFF

ATLANTA — Both AT&T Network Systems and Northern Telecom, Inc. used the recent Supercomm '90 show as a launching pad for products designed to ease regional carriers' introduction of Integrated Services Digital Network (ISDN).

AT&T introduced a family of products that is said to allow phone companies to switch IBM Systems Network Architecture data over ISDN switched connections without the need for either private lines or modems. The products include a cluster controller that is said to allow an AT&T 5ESS central office switch to support IBM 3270 terminal-to-host connections over an ISDN network. The resulting switched connection is said to eliminate the requirement imposed by traditional IBM coaxial cable that IBM 3270 terminals be located within 5,000 feet of the cluster controller, AT&T said.

AT&T also announced the following:

- The ISDN-based 6538/9 Display Terminal, which is said to support simultaneous data connections on four separate windows and voice connections on a fifth window.
- The ISDN 7506 Integrated Coax Data Module Display Terminal, which is said to convert coaxial data into a format that can be transmitted over an ISDN line.
- A PC/ISDN Card and software that is said to allow an IBM-compatible personal computer to emulate a 3270 terminal and connect to an ISDN telephone set for voice features.

Both AT&T and Northern Telecom announced support for the recently completed American National Standards Institute 2B1Q ISDN standard, which defines how customer equipment interacts with central office switches over an ISDN Basic Rate Interface connection.

Northern Telecom announced a free upgrade to ISDN 2B1Q compliance for all DMS-100 and DMS Supernode central office switches. Northern Telecom also offered full credit for inventories of its network termination devices and line cards, toward replacement with 2B1Q-compatible equipment. The offer holds good for systems that ship as of Jan. 1, 1991, the vendor said.

Northern Telecom's program is important because carriers had to bring equipment to market before the 2B1Q standard was finalized and thus have installed equipment that does not comply with the standard, according to Thomas Nolle, president of Voorhees, N.J., consulting firm CIMI Corp. "It's a minor maintenance change involving chip sets" but will be an expensive job if the carriers must pay for the migration themselves, he added.

Also at the show, AT&T announced a network interface for its 5ESS switches that is said to meet the 2B1Q standard.

BIT BLAST

AT&T Paradyne announces data communications rebates

AT&T Paradyne recently began an incentive program to cut the prices on its line of data communications products. Called America's Heritage, the program, which kicked off last week, will yield rebates of as much as 20% of the price of new equipment or lease/rental agreements. Customers will get a monthly credit equal to one-tenth of their total data communications lease and rental bill. The credits can be used for the lease, rental or purchase of additional equipment, AT&T Paradyne said.

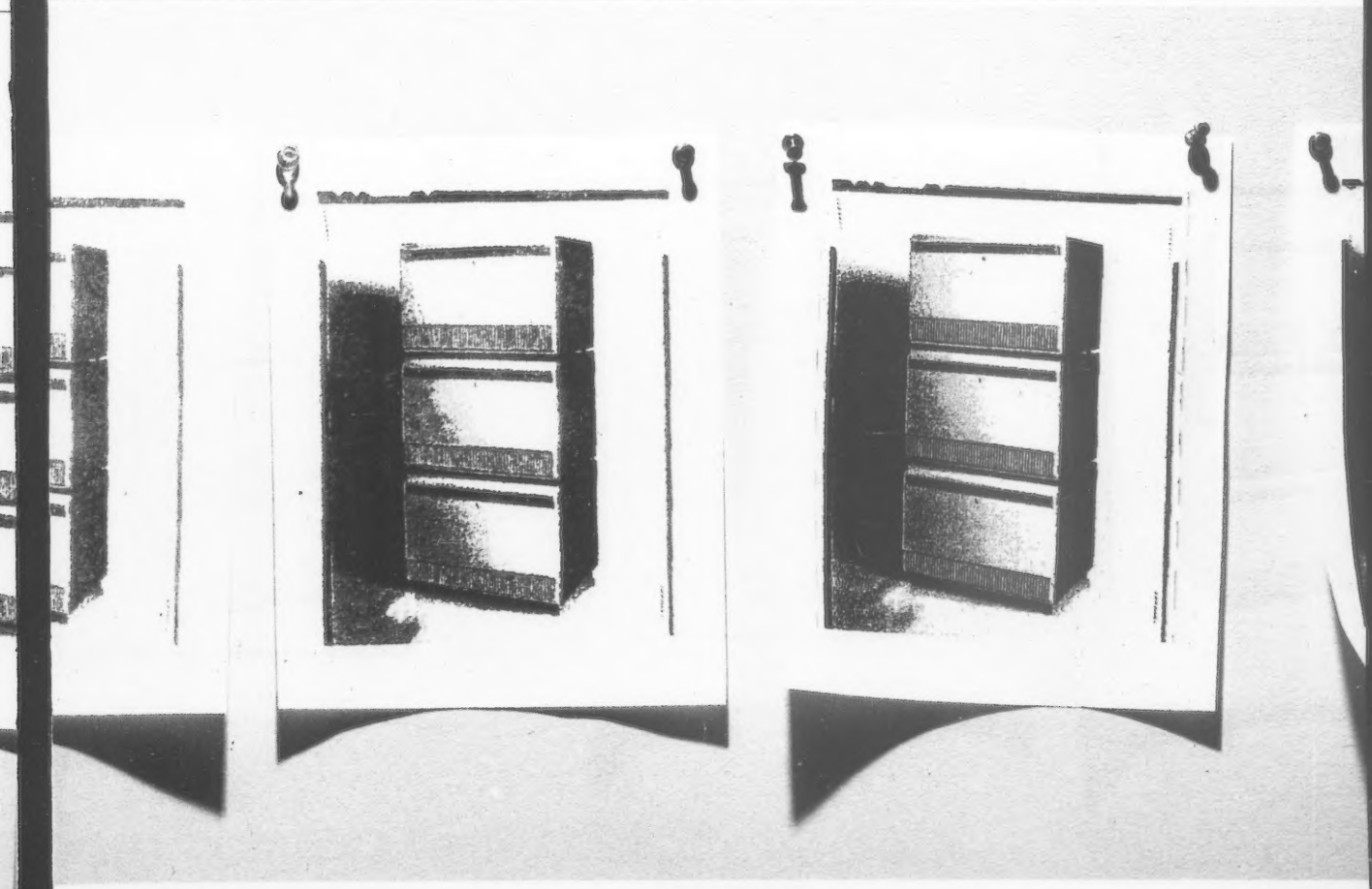
The Wollongong Group, Inc. and **The Ohio Supercomputer Center** have teamed up for product research, development and testing of all Wollongong products. The partnership, aimed to encourage the use of Transmission Control Protocol/Internet Protocol (TCP/IP) products in Ohio, provides discounts of up to 65% on Wollongong products for all qualified users of the Ohio Academic Resources Network.

Siemens Communications Systems, Inc. recently announced a strategy for bringing fiber to the home. The plan uses Passive Optical Network concepts to evolve telecommunications networks from voice services to broadband Integrated Services Digital Network.

Terminal server supplier **Able Computer Communications** has announced two trade-in programs. Users can swap a Digital Equipment Corp. Local-Area Transport-only Decserver 100 or 200 for Able's Advance terminal server, which runs both Local-Area Transport and TCP/IP protocols. In addition, Decserver 500/550 controller boards can be exchanged for Able's FP106, a front-end processor that is capable of supporting up to 128 lines.

Wang Laboratories, Inc. will resell **3Com Corp.'s** 10Base-T network adapters for connecting desktop computers to twisted-pair wiring systems under an extension of its OEM agreement with the local-area networking company.

Westinghouse Communications and **Phoenix Network, Inc.**, a long-distance network management company, have signed a three-year agreement under which Westinghouse will assist Phoenix in the provisioning and management of services from several long-distance carriers.



Horwitt

FROM PAGE 53

Some of those things may still be happening: Presumably, CSI will help 3Com link its network management system to IBM's. But 3Com is doing a lousy marketing job when it comes to letting potential customers know what its subsidiary is doing.

If Novell loses steam under Lotus' reign, you could call it poetic justice, considering that both Excelan and CXI sank practically without a trace after Novell took over. CXI used to be a viable competitor against mighty DCA in the terminal emulator board arena (DCA eliminated its other rival, Forte, by acquiring it — but that at least is straightforward competition).

Right now, Novell is pushing Excelan's Lanalyzer hard, but Excelan the LAN hardware vendor has all but vanished into the woodwork. Also, we didn't start hearing about Lanalyzer until Novell concluded that the LAN diagnostic market was heating up and shouldn't all go to Network General's Sniffer.

Are there any examples of acquisitions that have been ably handled? We might praise DCA for finally realizing it didn't know beans about selling T1 equipment and graciously selling off its T1 and network management subsidiaries to Racal.

We might also praise Racal for the thoughtfulness with which it seems to be acquiring and integrating a variety of potentially synergistic networking systems: DCA's T1 switches, Skynetwork's very small aperture terminal, Quanta's fiber-based network hubs and Interlan's LANs.

> IF NOVELL loses steam under Lotus' reign, you could call it poetic justice.

Racal only recently finished the last acquisition and is just beginning to figure out which pieces work together and should be managed together (modems and T1 multiplexers? T1 muxes and LAN bridges? LANs and fiber hubs?). So it's too early to tell whether the whole will end up being bigger than the sum of the parts or whether customers will buy the vendor's concept of one-stop network shopping.

Nevertheless, Racal deserves credit for giving its subsidiaries good marketing (and, I assume, research and development) support and for taking the time to make sure they play well together.

The same could be said for AT&T's treatment of Paradyne, which wasn't all that hot a networking company (except for its modems and channel extenders) when it got bought. AT&T put Paradyne's name on top of its data communications subsidiary (now AT&T-Paradyne), named Paradyne President and Chief Executive Officer John Mitcham head of the unit and integrated its own and Paradyne's modems under one management system.

The message being sent here is: "We value this acquisition and intend to wholeheartedly support it and do great things with it." This strategy can't help but foster good relations both with customers and with valuable human resources within the acquired company.

If other hungry cannibals in networking — and other computer-related industries — could adopt a similar approach, they might stand a better chance of getting full value out of their new properties.

Horwitt is a *Computerworld* senior editor, networking.

AT&T

FROM PAGE 53

customers a partial set of keys into the network control locker room.

Local exchange carriers have for years offered customers varying degrees of monitoring and control for Centrex services. Last month, New York Telephone applied the concept to private lines. By year's end, New York Telephone hopes to bring its network reconfiguration service (NRS), now in use by some 10 customers in the New York area, to the rest of the state.

From terminals or personal computers, customers access a Digital Equipment Corp. processor and use software from DSC Communications Corp. in Plano, Texas, to reconfigure up to 24 of their private T1 lines. The system then automatically updates digital cross-connect systems across Manhattan.

"We determined that customers want disaster recovery, the ability to automatically reroute traffic in the event of an outage," said Carl Douglas, staff director, special services at Nynex Services Co.

While the NRS service now permits on-line, manual reconfiguration, Douglas said plans are afoot to add automatic rerouting by the end of the year. Pricing for NRS is about $100 per month per T1 port in the digital cross-connect.

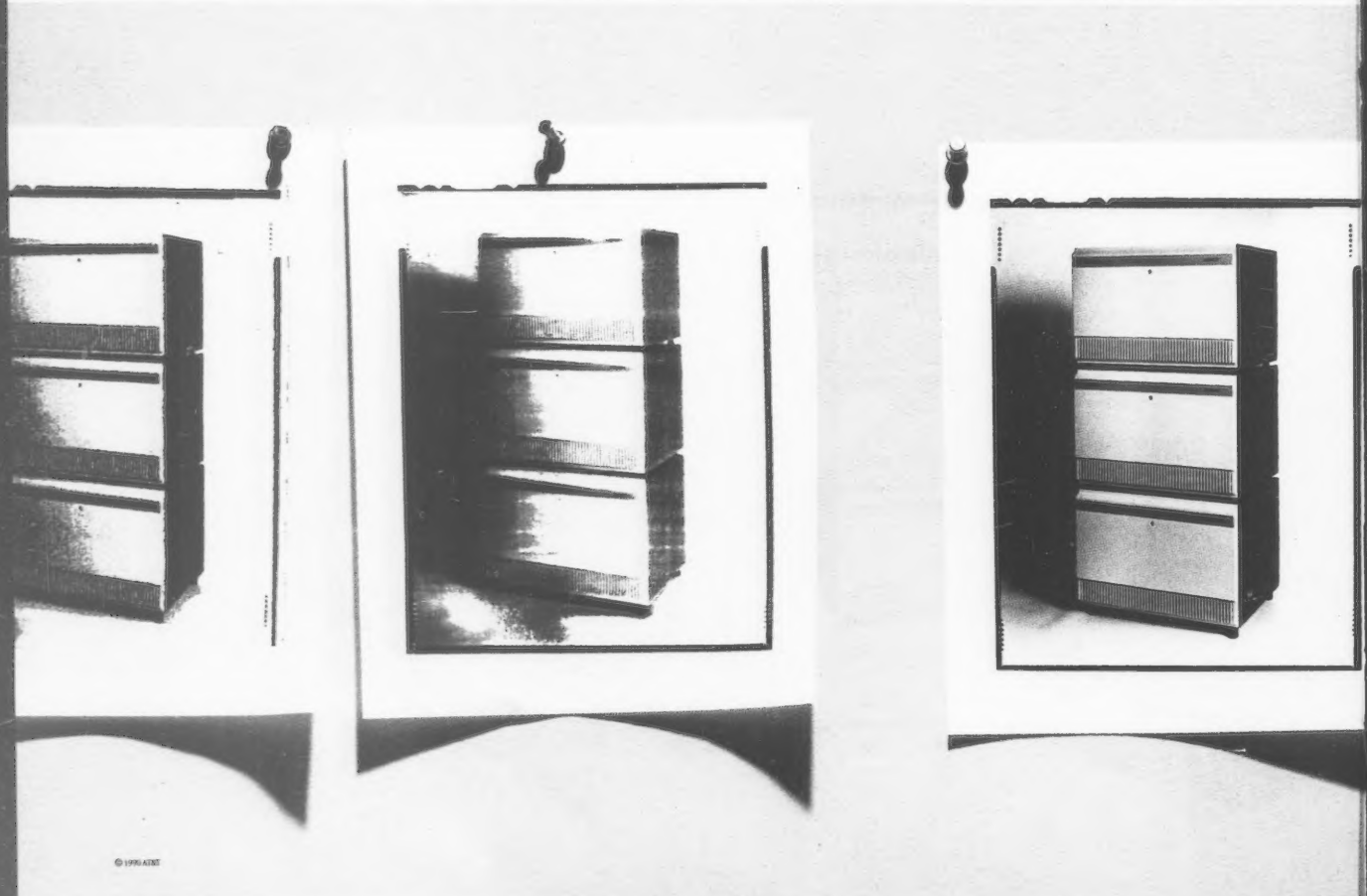
Meanwhile, Bellcore, the research and development arm of the seven regional Bell holding companies, is working on a standardized set of tools with which phone companies can deliver reconfiguration services to their customers — including residential customers.

Custom changes

At the recent Supercomm '90 conference in Atlanta, Bellcore demonstrated the latest of its Telegate software products for Intelligent Network applications. The Service Activation System permits subscribers to change their custom-calling features from home phones.

Pacific Bell Telephone began a trial of the activation system with its Sacramento, Calif., customers in late March and is considering a statewide implementation.

One of the biggest benefits of the approach, according to Pacific Bell Executive Director of Systems Technology Carol St. Pierre, is that it gives service representatives more time. "It cuts down contention for service representatives," she said.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NEW PRODUCTS

Network management

Neon Software, Inc. plans to announce its Netminder Ethernet software package this month.

The product was designed for Ethernet network managers and application developers who use Apple Computer, Inc. Macintosh computers. It enables users to construct, monitor and debug an Ethernet network as well as capture and examine Ethernet data. Statistics pertaining to data errors and network usage can be collected in numeric and graphic formats, the vendor said.

The product has a list price of $495.

Neon Software
Suite 203
1009 Oak Hill Road
Lafayette, Calif. 94549
415-283-9771

Integrated Solutions, Inc. has started shipping a new version of its Central System Manager that offers support for Digital Equipment Corp.'s Decnet using Tssnet in an Apple Computer, Inc. Macintosh system.

Version 2.0 includes a user interface that runs on a Macintosh workstation and controls the operations of DEC VAX computers. Its windows-oriented environment enables operators and system managers to perform VAX system management operations by clicking a mouse.

Pricing for the Central System Manager starts at $750 and varies by configuration.

ISI
1020 Eighth Ave.
King of Prussia, Pa. 19406
215-337-2282

Links

Joiner Associates, Inc. has added Jnet TCP NJE, Version 1.0 to its line of Jnet software products.

Version 1.0 works with Jnet Version 3.4 to provide Network Job Entry services over a Transmission Control Protocol/Internet Protocol network.

A one-time license fee for a single-processor configuration of Version 1.0 costs $6,000. A documentation and media kit sells for $300, and an annual software support fee is $480.

Joiner
P.O. Box 5445
3800 Regent St.
Madison, Wis. 53705
608-238-8637

Corporate Microsystems, Inc. has announced the Mlink Data Communications System for IBM's RISC System/6000.

Mlink provides users with terminal emulation, error-free file transfers, data compression and a built-in script language. It permits simultaneous communications from multiple ports and offers connectivity for AIX, Unix, Xenix, OS/2, DOS and other operating systems. Runtime versions sell for $390, and development systems cost $500.

CMI
P. O. Box 2059
Mt. Support Road
Lebanon, N.H. 03766
603-448-5193

Micro-to-host

Systems Strategies, Inc. has announced its Systems Strategies Express connectivity software for users of Unix systems.

The family includes Express 3270, which allows communications over IBM's Systems Network Architecture, Binary Synchronous Communications and X.25 networks; Express Hillapi, which enables application programs to be built for automatic communications with IBM mainframes via 3270 sessions; and Express X.25, which provides process-to-process and terminal connections for Unix and remote systems on X.25 networks.

Pricing ranges from $1,000 to $4,000, depending on the type of product and platform.

SSI
225 W. 34th St.
New York, N.Y. 10001
212-279-8400

Technology 80's *Channelpath supports LAN interfaces*

Technology 80, Inc. and Longtin Enterprises, Inc. have co-developed Channelpath, a data distribution and collection system that provides access to centralized data files while controlling security and integrity of a database.

The product enables users to read and write data directly from mainframe I/O channels to personal computer and workstation-compatible peripherals. It supports local-area network interfaces and permits large files to pass from mainframes to a LAN while preserving the integrity of the data. A complete system sells for $65,000.

Technology 80
658 Mendelssohn Ave. North
Minneapolis, Minn. 55427
612-542-9545

Network Software Associates, Inc. has announced an IBM Systems Network Architecture 3270 emulator for IBM Personal Computers and Personal System/2s.

The 3270 Elite uses 60K bytes of memory for local-area network or stand-alone applications and emulates an IBM 3278/9 Model 2 terminal in Distributed Function Terminal mode. It can be used in connectivity environments such as Synchronous Data Link Control, coaxial, LAN gateways and 802.2 direct Token-Ring attachments.

It runs on IBM PCs, ATs, XTs or compatibles as well as PS/2s and laptops. It costs $245.

Network Software
39 Argonaut
Laguna Hills, Calif. 92656
714-768-4013

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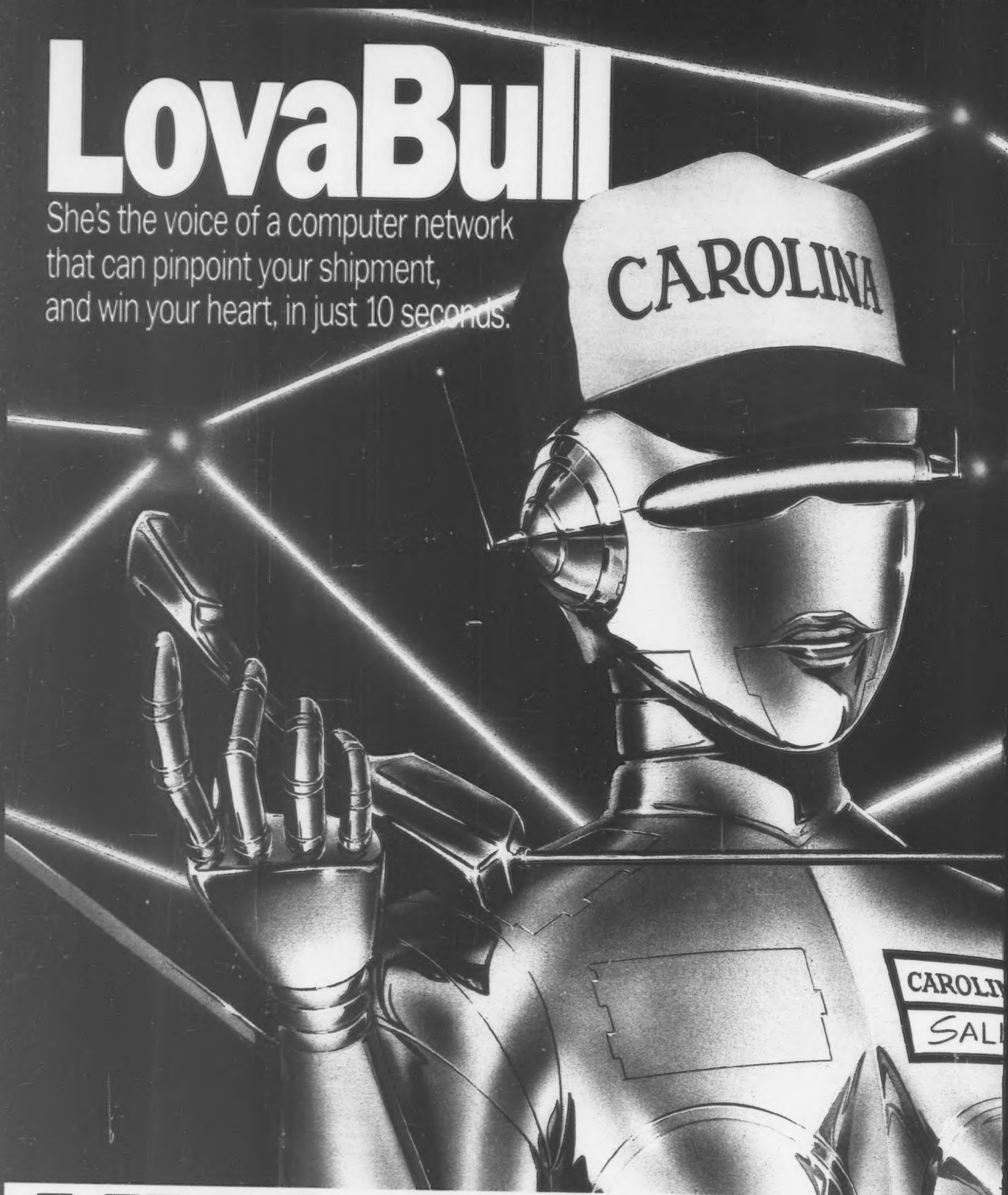

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MANAGER'S JOURNAL

EXECUTIVE TRACK

Wayne Mickiewicz has been promoted to senior vice-president of information systems at **Dollar Dry Dock Bank** in New York.

Mickiewicz, 38, joined Dollar Dry Dock in May 1988 from Datacorp Computer Group, Inc., where he served as president. Prior to that, he worked at Goldman, Sachs & Co. in New York.

Mickiewicz, a Manhattan resident, holds a bachelor of arts degree in sociology from Oneonta State University.

Scott J. Beltz, a manager at Extended Systems, Inc. in Boise, Idaho, has been elected president of **The Association for Systems Management (ASM)** for the year beginning June 1. Cleveland-based ASM, which holds its annual conference this week in Atlanta, represents 8,000 IS managers, analysts and consultants in the U.S. and overseas.

Paul R. Saunders, president of Saunders Systems Corp. in Nashville, was named ASM president-elect and will become president on June 1, 1991.

Other ASM officers elected were Vice-President **Linda J. Menard-Watt,** manager of administrative IS at the University of Windsor in Windsor, Ont.; Treasurer **William D. Munch,** an IS consultant in Pleasant Hill, Calif.; and Secretary **Ross A. Flaherty,** director of information resources management in the Microcomputer Resource Center at Texas Wesleyan University in Fort Worth, Texas.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

If you can't stand the heat . . .

Williams-Sonoma stirs up growth plans that fold in IS as the main ingredient

BY CHARLES VON SIMSON
CW STAFF

In an industry where recent expansion has too often been fueled by a reliance on enormous debt or marketing gimmickry, Williams-Sonoma, Inc. is something of an exception.

The San Francisco-based retailer and specialty-catalog company is in the midst of some heady growth plans in which operations play a strategic role. Over the next year, the company will complete several information systems projects that will enable growth while holding down payroll costs and integrating the two main lines of business.

It is a big job, but Richard Dykes wouldn't have it any other way.

"Everyone is ready for something major to come out of MIS," said Dykes, the company's vice-president of MIS. "We are in a position to do a lot for the company rapidly. It is really a lot of fun."

Today, Williams-Sonoma is a $215 million company offering one of the broadest lines of home products in the U.S. The firm's sales are derived from two areas: retail stores (55% of revenue) and catalog sales (45% of revenue). The company operates 118 retail stores under three different names, each with distinct themes: Williams-Sonoma for gourmet cookware, Hold Everything for home storage systems and Pottery Barn for home decorating goods.

The firm mails approximately 70 million catalogs annually to a house list of six million consumers. While total sales have tripled during the last five years, many of the firm's concepts are only beginning to roll out nationwide.

"I believe the company has clearly established a proven formula in both the mail-order market and retail-store arena to become the dominant retailer of better-quality household goods in the 1990s," said Frank Podbelsek, a retail analyst at Paine Webber, Inc. in New York.

Ed Kashi

Richard Dykes' *first priority is to merge two disparate automation lines*

Dykes' job may be fun, but speed is the operative word at Williams-Sonoma these days. The company's mail-order and retail businesses are currently handled by separate computer operations, even though much of the merchandise the company handles is common to both lines of business.

"Because IS had not traditionally taken a role in distribution, we have two distinct islands of automation," Dykes said. "Bringing the two together under a single inventory is our primary goal for the next 12 months."

Fortunately, the two disparate systems are technologically compatible. Combining the retail and catalog systems will be enabled by porting the company's databases from IBM System/38 computers to Application System/400s within the next year.

"The AS/400 platform will give us far more flexibility in upgrades," Dykes said. "We were beginning to run out of capacity on the System/38, and the scalability will allow us to more flexibly manage capacity."

On the software side, the company is looking to use standard applications with minimum modifications, so the available applications suite for the AS/400 was also a major attraction.

Also, Williams-Sonoma's 400,000-sq-ft distribution center is being expanded to 700,000 sq ft as part of senior management's goal to become the lowest cost receiver and distributor in

Continued on page 63

Greener IS pastures not found in the UK

BY CLINTON WILDER
CW STAFF

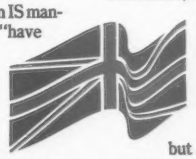
The grass may be greener on the other side of the fence, but it isn't any greener on the other side of the Atlantic.

According to recent research by British information systems research consortium The Butler Cox Foundation, IS managers in the UK face many of the same problems and challenges as their counterparts in the U.S. In some cases, such as technical talent shortages and staff turnover, the situation may be even worse.

One Butler Cox report admonished IS management to break traditional patterns of recruiting and hiring systems professionals. Butler Cox consultant Graham Otter noted that most British IS departments continue to be obsessed with technical skills when hiring, instead of considering people skills, business sense and willingness to learn.

Traditional technical experts "provide the highest turnover levels among IS staff," he said.

The problem stems from IS managers themselves, who "have become preoccupied with using technology at the expense of managing staff," Otter said.



Another report suggested that the end-user autonomy dilemma is every bit as big an issue in the UK as in the U.S.

In 12 recent projects researching various IS issues within British client companies, Butler Cox discovered that the need to balance end-user flexibility with central control was the key issue for IS managers.

"If users go too far their own way, there is a danger that the organization will be set in 'electronic concrete,'" said Butler Cox research director Roger Woolfe. "If the IS department is too centralized, there is a danger of losing user initiatives, involvement and support."

Woolfe said IS directors must be prepared to give up control of applications development but must also take charge of standards definition and technical architecture specification as centralized functions.

The Butler Cox Foundation is a research service of London-based IS management consultancy Butler Cox PLC.

CALENDAR

The World Computing Congress VII will be held June 3-6 in Washington, D.C. The event, hosted by Adapso, will be held in conjunction with Adapso's 72nd Management Conference.

The focus of the Congress will be international computing issues. Seminars will be led by industry experts from around the world who will discuss the possibilities of new ventures and the techniques and skills necessary for survival and success in an increasingly competitive marketplace. Delegates from 25 countries are expected to attend.

For more information, contact Adapso in Arlington, Va., at (703) 284-5355.

MAY 13-19

Management Systems Council of the American Trucking Association National Conference and Computer Exhibition. Las Vegas, May 13-16 — Contact: MSC, Alexandria, Va. (703) 838-1721.

Share 74.5. Kansas City, Mo., May 13-16 — Contact: Share Headquarters, Chicago, Ill. (312) 644-6610.

International DB2 Users Group Conference. Chicago, May 13-17 — Contact: IDUG, Chicago, Ill. (312) 644-6610.

Office Systems Expo. Atlanta, May 14-15 — Contact: Inforum, Atlanta, Ga. (404) 220-2682.

Executive Information Systems: From Planning to Implementation. McLean, Va., May 14-16 — Contact: Technology Transfer Institute, Santa Monica, Calif. (213) 394-8305.

Hammer Forum. Boston, May 14-16 — Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

Managing Information Resources in the 1990s. Hershey, Pa., May 14-16 — Contact: Information Resources Management Association, Harrisburg, Pa. (717) 939-8972.

Project Management Through the '90s. Chicago, May 14-16 — Contact: Digital Consulting, Andover, Mass. (508) 470-3880.

Update to Standards in Industrial Automation. St. Louis, May 14-16 — Contact: Ruth J. Bagozzi, SME Conference Department, Dearborn, Mich. (312) 271-1500.

Expert Communication '90. Austin, Texas, May 14-17 — Contact: Conference Chairman, L. Mills Davis, Washington, D.C. (202) 667-6400.

Comprehensive MVS/XA and ESA Performance Management Seminar. Los Angeles, May 14-18 — Contact: L&S Computer Technology, Austin, Texas. (505) 988-3811.

International Quality Week Conference. San Francisco, May 15-18 — Contact: Software Research, San Francisco, Calif. (415) 957-1441.

Software Performance Engineering. Santa Fe, N.M., May 15-18 — Contact: L&S Computer Technology, Austin, Texas. (505) 988-3811.

Tenth Annual Human Resource Systems Professionals Conference. Kissimmee, Fla., May 15-18 — Contact: Gary D. Barr, HRSP, Dallas, Texas. (214) 661-3727.

Introduction to AIX System Administration. Toronto, May 16-18 — Contact: The Braegen Group, Judy Neumann, Toronto, Ont., Canada. (416) 366-6363.

Software Rapid Prototyping. Newport Beach, Calif., May 16-18 — Contact: University of California, Irvine, Calif. (714) 856-5414.

DAT '90. San Jose, Calif., May 17 — Contact: Data Storage Concepts, Santa Barbara, Calif. (805) 964-6510.

Strategic Systems Redux. Wellesley, Mass., May 17 — Contact: Babson College Center for Information Management Studies, Wellesley, Mass. (617) 239-4531.

Computer Viruses Program. Boston, May 17-18 — Contact: TTC Conferences, Torrance, Calif. (213) 534-3922.

MAY 20-26

Computer and Communications Strategies for Global Competition. Dallas, May 20-22 — Contact: Lori Cardarelli, CIO Magazine, Framingham, Mass. (508) 872-8200.

Information Technology and the Modern Organization: The Challenge of Change. Los Angeles, May 20-22 — Contact: Ginny Hyatt, UCLA, Los Angeles, Calif. (213) 825-1879.

International Office Technologies Association Meeting. Florham Park, N.J., May 20-22 — Contact: Ruth Schwartz, International Office Technologies Association, New York, N.Y. (212) 463-0684.

Managing Apple Computers in Information Systems. San Francisco, May 20-23 — Contact: MACIS, Chicago, Ill. (312) 644-6610.

National Operations and Automation Conference. San Diego, May 20-23 — Contact: American Bankers Association, Washington, D.C. (202) 663-5430.

Society for Imaging Science and Technology 43rd Annual Conference. Rochester, N.Y., May 20-25 — Contact: SPSE, Springfield, Va. (703) 642-9090.

Decision Support Systems: Information Technology for Executives and Managers. Cambridge, Mass., May 21-23 — Contact: Registrar, The Institute of Management Sciences, Providence, R.I. (401) 274-2525.

After everything that's been said about NetWare® 386,

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Heat

FROM PAGE 61

the industry. The company located its distribution center in centrally situated Memphis to allow more rapid access to customers and to tie into Federal Express Corp.'s main shipping facility. As a result, mail-order goods are sent faster and at lower cost.

Dykes said he feels that IS has a central role in spurring growth while maintaining control over costs. "During the expansion of the warehouse, it is our intention to add no labor," Dykes said. "The combined inventory management will allow us to do that, and as a result, the project will pay for itself in 12 to 18 months."

However, more than a cost-control effort, the combination of inventory systems is basic to the company's strategy. "They clearly focused on exploiting synergies between catalog sales and retail-store sales," Podbelsek said. "The firm has reduced much of the risk of expanding into new retail markets by first firmly establishing demand through catalog sales. Catalogs provide important data on optimum store locations and inventory."

While combining inventory systems will be the main focus of the project, Dykes is also heading an effort to install advanced OS/2-based point-of-sale (POS) systems in all Williams-Sonoma retail locations. The company's executives expect to grow the number of retail locations by 20% over the next few years, and an advanced POS system will give them the flexibility to do it. "We are really planning for the unpredictable," Dykes said.

Besides creating increased labor efficiency, the POS systems will capture a greater level of detail on customer activities — information that can be used on both sides of the company.

"The company's extensive computer database allows the firm to select new products, target potential new markets and increase efficiency and response rates of mailing," Podbelsek said. "Sending catalog mailings on compatible items to the owner of a new espresso machine adds a whole new dimension to marketing."

Flexibility is key because planning demand is a primitive science in the retail industry. "We do not advertise. The catalog is really the vehicle for advertising the stores," Dykes said. "While we are always improving accuracy, it is critical that we have catalog items ready on an on-demand basis. It is one of the most sensitive ways that we deal with customers."

Most important of all, Dykes said he believes the combined IS and common databases will shape a new unified view of the business from the executive suite. "The priority for us is to create an environment where decisions are based on a knowledge of the entire business," he said. "Today we are looking at pieces, and that is something this organization has the power to change."

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IOTA to study productivity

NEW YORK — Six large companies and three universities have formed a new association to study office technologies, work processes and management procedures to promote cost-effectiveness and productivity.

The International Office Technologies Association, or IOTA, will hold its initial meeting May 20-22 in Florham Park, N.J. A follow-up meeting will be held there May 27.

IOTA will "promote the cost-effective and productive integration of office technologies in organizations through the exchange of practical experiences and research among its members," executive director Michael Chumer said.

Planning committee members are Bell Atlantic Corp., Exxon Corp., Eastman Kodak Co., Xerox Corp., Imperial Oil Corp., Sandoz, Inc., Grand Valley State University, the University of Georgia and Fairleigh Dickinson University.

More information is available from Ruth Schwartz or Liz Hinden at (212) 463-0684.

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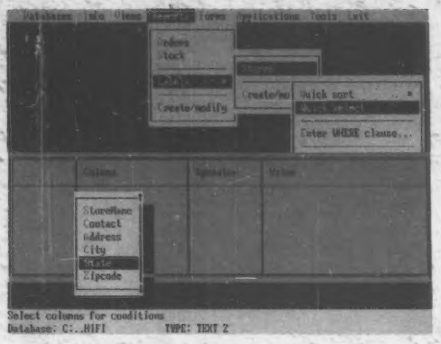

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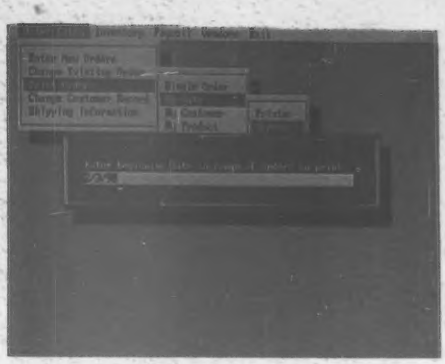

Application EXPRESS generates code as you develop the prototype. It enables you to quickly deliver a basic application—then extend it to whatever level of sophistication you like.

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TAKING CHARGE

Don Ferruggia

More change than you think

I've seen it more than once. A firm introduces an electronic mail system to speed up and improve internal communications. Within three or four months, personal conflicts are at an all-time high. Simmering resentments have flared up into open warfare, several factions have developed, the troops are restless, and management is livid.

What's going on? Once again, a promising technology has had unexpected human side effects. It will all calm down again, after a short adjustment period — but this uncomfortable period could have been predicted and avoided.

The lesson for people who introduce new technology is that new technologies change more than we plan them to. What programmer or analyst has never been surprised by the unexpected way a user found to use a system?

E-mail is more than a new technology; it changes the way people communicate. When we talk to people face-to-face, we have constant feedback about the results of our communications. We can see if the boss is getting angry, doesn't understand a point we've made or is impatient.

We react to this visual feedback by modifying what we say and the way we say it; the result is good communications.

Now consider talking on the telephone. This is something we've being doing all our lives, so we know how to extract feedback from it, too. If we are willing to listen, we can tell from the other party's voice almost as much as we could by seeing him face to face. The result, again, is good communications.

Memos are one of the most common forms of office communications in large firms, at least in dealing with people more than one level higher or lower in the corporate hierarchy.

There is no real feedback from a memo, because we write the whole thing before the other person sees it. Still, we have dealt with memos for a long time and know how to write them. They tend to be written in a stilted, "businesslike" language that is bland and unemotional.

More importantly, we review them ourselves (for typos, signatures and so on) and thus provide our own feedback before they are sent. A helpful secretary will even prod us: "Do you really want to call the VP a dodo?" Again, the result is good communications.

Finally, to E-mail. Zero feedback. We receive a message on the screen, and before we have time to digest it, we write an answer off the top of our heads. Press a button, and it's gone. A minute later it hits us: "Did I really call the VP a dodo?" The end result is emotional or aggressive communications.

The problem here is that we have shot off an answer before our initial emotions have had time to subside. Sure, after a few embarrassing incidents, we'll learn to wait and take our time. We probably had a few embarrassments the first time we used the telephone by ourselves. Things are bound to heat up a little while people are in the learning stages.

Yet in many cases, these things are predictable and preventable.

For example, when setting up the E-mail system, we told people that it would make communications quicker. If asked what the result of quicker communications would be, we would have listed all the positive benefits — more done in less time, less paper wasted, more timely delivery of data and similar types of things.

We never asked ourselves, and no one else stopped us to ask, what would be the negative aspects of quicker communications? If we had done this, we might have built in an "Oops, I take it back" feature, or we could at least have been able to tell people to review their answers carefully before sending them.

When building any system, we need to identify what side effects the system can have. We can do this by asking, for every change the system will bring, "What negative result can this have?" and "What else will this allow to happen?"

Ferruggia is president of Personal Excellence, Inc., a consulting and training company in Warwick, N.Y.

EDS takes the wheel

PHILADELPHIA — Westmoreland Coal Co. relinquished control of its information systems and communications operations to Electronic Data Systems Corp. last week. Consequently, 37 Westmoreland IS employees are now working for Electronic Data Systems.

Westmoreland, a $550 million coal producer and marketer, signed a 10-year contract with Electronic Data Systems.

Larry Zalkin, Westmoreland's vice-president and chief financial officer, said in a statement that the company's decision to outsource to Electronic Data Systems was based on a strategy to reduce costs, gain operational efficiencies and "enhance our informational and technological capabilities."

Westmoreland's IS employees join approximately 2,200 Electronic Data Systems workers in the Philadelphia area. Electronic Data Systems claims to be the largest provider of IS services in energy-related industries.

BOOK REVIEW

Catching the EIS fever — for better or worse

THE EIS BOOK: INFORMATION SYSTEMS FOR TOP MANAGERS
by Alan Paller with
Richard Laska
Dow Jones-Irwin, $24.95

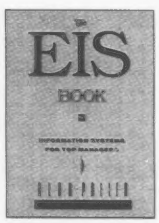
Alan Paller and Richard Laska have been infected, and they would like to infect you with a sense of the transcendent power of executive information systems. At times, *The EIS Book*'s authors approach missionary-like zeal in their insistence on the value — indeed, the necessity — of an EIS. Their description of prototypical EIS project directors could easily apply to the authors themselves: "They profoundly believe that a good EIS can yield benefits beyond the organization itself. They are on the front lines of a revolution. If all this sounds a bit heroic, you haven't been infected by EIS yet. Just wait."

However, don't let the evangelical tone put you off; there is enough meaty information here on designing and implementing an effective EIS for even the most cold-blooded pragmatist to sink his teeth into.

An EIS is a computer-based support system for executives that performs a function once handled exclusively by midlevel managers who assembled and digested vital corporate information and transmitted it to top executives in a meaningful form.

According to the authors, EISs are information systems in their most highly evolved state. As such, they are a pragmatic tool for the executives who want to stay on top of the competition by having the most current, specific, usable information at their fingertips, without dilution by intermediaries.

Within a historical background, the authors essentially attribute the success of the first mission to the moon to a National Aeronautics and Space Administration EIS — the first on-line EIS, they claim. NASA's moon mission was the perfect environment for the development of an EIS in that it had a clearly defined goal, management needed daily status reports, and its contractors had experience building IS systems for the military. According to Paller and Laska, the EIS designed by Boeing Corp. proved to be up to the task. They quote James Webb, who ran NASA's entire program during the moon mission years, saying: "We could not have made it to the moon without the information systems used by Boeing and other contractors."



They then lead you through the process of finding an EIS sponsor, identifying a business goal and designing and implementing an effective system.

They identify a multitude of potential pitfalls and how to avoid them. For example, they tell of two EIS pioneers who introduced EISs before identifying business goals important enough to justify the cost — and lost their jobs because of enemies made through too vigorous self-promotion.

Their advice ranges from the mundane to the exalted. For instance, they note that because many executives have poor eyesight, the EIS should present information in a format that can be easily seen, preferably in a graphic form. At the other extreme, they argue that the successful implementation of an EIS could be a career launching pad for hard-working but hitherto unrecognized IS directors.

Clearly, the pragmatic value of this book goes beyond the technical questions of hardware, software and graphical interface. In fact, its subtitle might well have been "The Politics of IS," for on one level this is a primer on corporate politics and how to turn them to your advantage.

There's an almost Machiavellian cast to some of these tales of corporate intrigue, brinksmanship and thinly veiled threats sometimes used to further the implementation of EIS. For instance, the treasurer of a multi-billion-dollar corporation once assured an EIS consultant, " 'Don't worry about this system much. Nothing will happen to you if it doesn't work. But you see those two other fellows?' he asked, indicating his two employees. 'If it doesn't work, they're both out of here.' "

The success or failure of an EIS, the authors say, often rides on the political skills of the EIS director and his team. Paller and Laska have the credentials to give their advice some weight. Paller led the team that created the EIS used at General Motors Corp. Laska created an early government EIS.

The pair's government experiences make for some juicy insider anecdotes. For example, there is the tale of the colonel who, against the advice of his EIS director, installed a lot of flashy display equipment in a Pentagon briefing room. The nearsighted general for whom the EIS was created couldn't read the displays and asked, "What is this crap?" The EIS was eventually salvaged, but the colonel was transferred to another continent.

For a book that stresses the importance of EIS presentation, the number of grammatical, spelling and typographical errors is surprising. Despite this defect in an obviously carefully researched book, what gives the authors credibility is their consistent emphasis on the importance of sound management principles over technological gadgetry. They repeatedly stress that the technology itself is useless in the hands of someone who lacks a vision of its purpose or the political skills to carry others along on the mission.

Even if you are not infected with the authors' boundless EIS enthusiasm, *The EIS Book* may challenge your immunity to an onslaught of clearly presented, timely examples of effective EIS implementations.

LISA GUISBOND

Guisbond is a free-lance writer based in Cambridge, Mass.

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FINANCIAL SOFTWARE

You can't remodel around old supports

BY PATRICIA S. FOY

Two years ago, GTE Directories Corp. in Dallas decided to replace its payroll and human resources system. The company spent nearly four months in requirements definition, and when it started evaluating the commercial packages available on the mainframe, says Terry Erbert, director of compensation and benefits at GTE, it was disappointed.

"Most packages did not allow the latitude we wanted," Erbert says. Inflexible screen formats, cumbersome input mechanisms and a lack of customization links did not fit the particular needs of the departments and businesses.

For years, people have been wary of shaking what is often considered the foundation of their business systems — accounting software. Accordingly, developers of these systems concentrated on producing software that was more reliable than it was innovative.

However, faced with business and technology trends such as mergers, worldwide competition, decentralization and evolving information architectures, people today need and expect more than just clerical functions from their financial systems. Disparate departments want access to corporate financial data, executives want a high-level view of financials, no one wants to sacrifice data integrity, and it seems that every day, more people become interested in newer technologies such as graphical user interfaces.

People are recognizing that financial software can be the key to understanding the business — but only if the appropriate people can access the right kind of information and use it to their advantage.

"Consumers are becoming much more demanding in their expectations of the software," Erbert says. "They're used to working on PCs and getting quick results. Today's systems need to have some degree of flexibility to take advantage of current and future technologies."

Vendors have not reacted to this turnabout as quickly as users would like; in some cases, they must rewrite their entire applications to conform to the new demands. While many products are attempting to start things moving in the right direction, both users and vendors need to make some long strides before business needs can be met.

Colgate-Palmolive Co. in New York is trying to gain the benefits of a centralized system within a distributed setup and is currently evaluating a move to fuller function midsize financial software, according to Rick Cote, controller at the company.

Like Erbert, Cote is striving for access flexibility. "I want people to be able to go to one source to access all pertinent financial and operational information," Cote says.

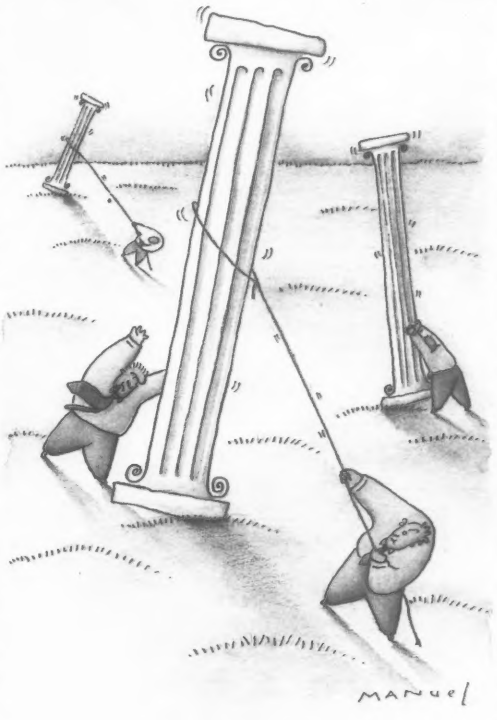
The midrange is the platform many users are moving to for distributed processing. These downsized financial systems cannot always handle quite the transaction volume of their mainframe cousins, but midsize software comes close to being a mainframe equivalent. These packages are less costly than those on the mainframe, more easily implemented and — when set up right — can give departmental users needed access.

Full-function financial systems are currently available on Digital Equipment Corp.'s VAX systems, IBM's Application System/400 and Hewlett-Packard Co.'s 3000 machines. For example, Software 2000, Inc. and J. D. Edwards & Co. have leveraged the popularity of IBM's AS/400 series, and longtime players such as Ross Systems, Inc. are trying to expand their image from stand-alone support of DEC's small systems to a large environment supporter. Other vendors, such as Lawson Associates, Inc. and Global Software, Inc., have AS/400 products.

"Maybe functionality isn't as robust with a midsize package, but you can save a huge amount of money compared to a mainframe solution," says Peter Henreid, director of MIS at Grupe Co., a large home-building and real estate development company in Stockton, Calif., which recently implemented a number of financial modules using J. D. Edwards' packages.

However, the presence of a midsize machine does not guarantee better usability at the departmental level. In a true departmental system, portions of the data are processed at users' locations. If the machine is still centrally operated, users will have the same limited access that they had to the mainframe.

At Playboy Enterprises, Inc.



Manuel King

Foy is director of the software intelligence unit at Coopers & Lybrand in New York.

INSIDE

Who Takes the Tucks? Self-styling gets easier, but some still prefer specialists. Page 68.

Buyers' Scorecard Global Software's mainframe general ledger takes user vote. Page 76.

Product Face-Off PC modelers Encore Plus, IFPS Personal in the ring. Page 72.

Integration vs. specialization

BY DANIEL DIBARTOLOMEO

When Gold Kist, Inc. decided to upgrade its accounting system, the billion-dollar agricultural firm bypassed the packages tailored to meet the specific needs of the agricultural industry. Instead, it went looking for a generic accounting system that it could customize.

What the Atlanta-based firm eventually chose was Global Software, Inc.'s modular accounting system, according to Charles Andrews, an independent consultant at the firm. After extensive in-house applications development, Andrews says, the company is pleased with the system: Not only does it meet its applications needs, but it also keeps its financial systems budget at a cool $4 million.

Customization has always gone hand-in-hand with generic financial systems because users needed to fit their accounting functions as closely as possible to the way their industry did business. While vertical packages were developed to meet these industry-specific needs, developers of generic packages are now starting to offer more powerful application generators in their software, says Peter Kastner, a vice-president at Aberdeen Group in Cambridge, Mass.

"Major application suppliers are using 4GLs and CASE technology to allow users to maintain and customize their base-level applications," Kastner says.

Besides their customization ability, generic packages are also designed to integrate with existing accounting modules. This is especially helpful for firms with more than one line of business.

"If you're a company with multiple businesses," Kastner says, "you start to lose the edge of vertical packages that don't talk to each other too well. General packages are designed from the beginning to roll up subsidiaries."

On their side, vertical package developers are starting to build in customization capabilities, Kastner says. Ask Computer Systems, Inc., for example, is using a fourth-generation language tool set in its Manman product, a package designed for discrete manufacturing firms.

The true strength of vertical packages, however, is their service and support capabilities. By paying attention to the idiosyncrasies of a particular industry, the developers of vertical packages can be allies to a company trying to fit the system to the business.

"If you supply software to a law firm and can speak their language, the customer can understand better what they're buying," Kastner says.

For large organizations, Kastner recommends opting for more generic but easily customizable packages "so they can integrate their accounting into an overall strategic inititiative," he says.

However, some organizations — especially smaller companies — either opt for the enhanced service and support of vertical packages or do not have the in-house programming resources to customize, according to Kastner.

National Mentor, a health and social services company in Boston, is one organization that took the vertical option. Faced with the inconsistent regulatory requirements of social service agencies throughout the country, systems analyst David M. Kline opted for a clinical billing system that would cut down on the complexity.

The company chose Save Time and Money, a billing system from STM Technology, Inc. in Acton, Mass. The personal computer package handles the complex paperwork requirements of National Mentor's insurance company and government agency payers. The rest of the system consists of MAS90 accounting software from State of the Art, Inc. in Costa Mesa, Calif., and the Datawriter reporting system from Accounting Microsystems, Inc. in Bellevue, Wash.

Each specialty package is linked together with small utility programs, which are either written in-house or provided by consultants.

Vertical route

There are times when industry-specific software is simply the only answer.

In banking, for example, strict regulations and very specific operational requirements force most institutions to take the vertical route.

"For banks and stockbrokers, the net worth of the company is tied up in marketable securities," says Greg McNeillie, vice-president at J.A. Hannah Investment Advisers in Boston.

Given this complexity and importance, McNeillie chose a portfolio package that meets these specific needs. He uses the Professional Portfolio by Advent Software, Inc. in San Francisco.

"There are dozens of types of securities in the U.S. alone," McNeillie says. "Accounting for each type of security and transaction requires the system to have routines particular to that kind of financial instrument. A normal accounting package just couldn't do it." •

DiBartolomeo is president of Northfield Information Services, an applications developer in Boston.

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Remodel

FROM PREVIOUS PAGE

in Chicago, which recently implemented Software 2000 general-ledger and accounts-payable packages on the midrange, "our users schedule and run their own package applications," says Ray Giestikis, manager of data processing at the firm. For specific departmental information, Playboy users developed custom reports using the package's report writer, and a token-ring local-area network links spreadsheet, word processing and human resources with the main system.

However, while users upload journals done at the personal computer level to the general-ledger package, downloading is not yet a possibility. "We're not downloading yet," says Frank Chor, manager of end-user computing, "but we'd like to, especially for consistency in budgeting-related pieces."

One drawback of moving to the midrange is losing access to data or functionality customized in old mainframe systems. When a buy-out took Dallas-based Chief Auto Parts, Inc. off its parent company's mainframe financial system, the firm set up its accounting on a midrange system, according to Tom Metcalfe, director of MIS. The main intent was to make information available to users as quickly as possible.

However, Metcalfe found that a lot of the customizing that had taken years of work to do on the mainframe was lost to the midrange system, making some reports unavailable.

Now, however, Chief has more control than in the old centralized system. "Now we do our own queries and reports," Metcalfe says. "However, we're not using the report writer inherent in the package, since it doesn't meet our needs."

On both midsize and mainframe platforms, however, users cannot always access certain data, such as industry-specific and consolidation information. Many users are opting to develop customized interfaces to overcome package limitations.

Such was the case at Grupe. Henreid says he knowingly bought a package that met only his basic accounting needs. For each feature that was missing — such as a Lotus Development Corp. journal entry upload, which is essential for maintaining budgets by individual department — the information systems department wrote a custom program.

Of course, Henreid notes, this adds to an already heavy applications development backlog. Worse, the customized applications do not always integrate smoothly with other modules.

"Adding on one piece at a time has its disadvantages," he says. "Unfortunately, custom package add-ons can force customers into an environment where all the modules aren't smoothly integrated."

While vendors are building in customization capability with fourth-generation languages and, in some instances, offering computer-aided software engineering tools or PC packages to customers (see story this page), this is only a short-term solution. Such add-ons will eventually become burdensome. What is necessary is for developers to completely rewrite their applications portfolios to achieve a number of things, including portability across hardware and software architectures, cooperative processing and true relational capability.

"MANY TIMES, organizations do not have a systems strategy that is tied to a business strategy, so decisions get made in isolation."

RICK COTE
COLGATE-PALMOLIVE

Microcomputer interfaces will play an important part of systems usage. With 90% of worldwide processing power installed on PCs, according to International Data Corp. in Framingham, Mass., micros are not a platform to ignore. Based on processor costs alone, its advantage over both mainframe and minicomputers is almost double.

Cross-platform portability is an issue that all vendors will eventually have to address. The architectures that will be dominant are IBM's Systems Application Architecture (SAA), DEC's VMS operating system and Unix. While two-tier processing will most likely be the norm, software integration and data

access will be an ongoing challenge for the decade — and a bewildering one at that.

Some of the financial software developers have started in this direction. For instance, Management Science America, Inc. — now Dun & Bradstreet Software — has long-term plans to rewrite its applications, and Lawson has a set of tools written for Unix. Oracle Corp. sets itself ahead of the pack by having released a suite of financial software products that it says is operable across multiple hardware platforms.

But recent user evaluations call for a second look at how far any such claimed integration has progressed toward operational reality. Software bugs in the Oracle financial applications, lack of support and its inability to perform on hardware other than Sequent Computer Systems, Inc. (the original development platform) have caused many user problems.

There is also a growing need for software to support network integration and cooperative processing. While some vendors avoid the issue by saying that the true definition of cooperative processing is still an unknown, others are preparing products to address at least part of the cooperative processing dilemma, especially the client/server model.

It is important to remember that cooperative processing is not just a "borderless query" capability, but that it is based on an architecture that allows two computers to share the processing of a program. It is no small task for developers to rewrite applications to handle such processing, especially considering additional requirements for access, security and control in an inherently more complex environment.

The current tack many developers are taking — including Dun & Bradstreet, Global Software, Ross Systems and Coda, Inc. — is to offer a PC mask to their midsize or mainframe solution. While a few of these PC add-ons offer programmable workstation capability, many such extensions do not provide actual distributed functionality but act only as a dumb terminal, processing batch transactions or queries against discrete applications.

One firm, a German financial software firm called SAP, seems closest to delivering software for the client/server model. It restructured its entire design methodology in 1986, after IBM's SAA announcement.

Along with Computer Associates International, Inc., SAP also has DB2 products in the works. Meeting the user need for relational databases, many other firms have released mainframe DB2 financial products, including Walker Interactive Systems, Inc., Dun & Bradstreet (with a general-ledger package), Lawson, Integral Systems, Inc. and Tesseract Corp.

Relational databases provide users with an ad hoc approach to accessing information. But it is important to note whether the product is what it says it is. With the rush to get a relational product out, "first to market" took priority over technical purity. For example, in the AS/400 environment, the software can be running in either native OS/400 or emulation mode.

On the whole, executives are realizing that they need the information gathered from financial software to make competitive decisions. The problem lies in accessing the appropriate financial data at the executive level. Many companies are overcoming this by combining financial systems with decision support and executive information systems (EIS).

Some financial vendors, through strategic partnering with EIS vendors, are offering access to some of their modules through an EIS. Vendors such as Dun & Bradstreet, Ross and J. D. Edwards have agreements with Comshare, Inc. for hooks to EIS products. Others, such as CA and Software 2000, offer their own products for some EIS-type functions.

While some companies such as Playboy

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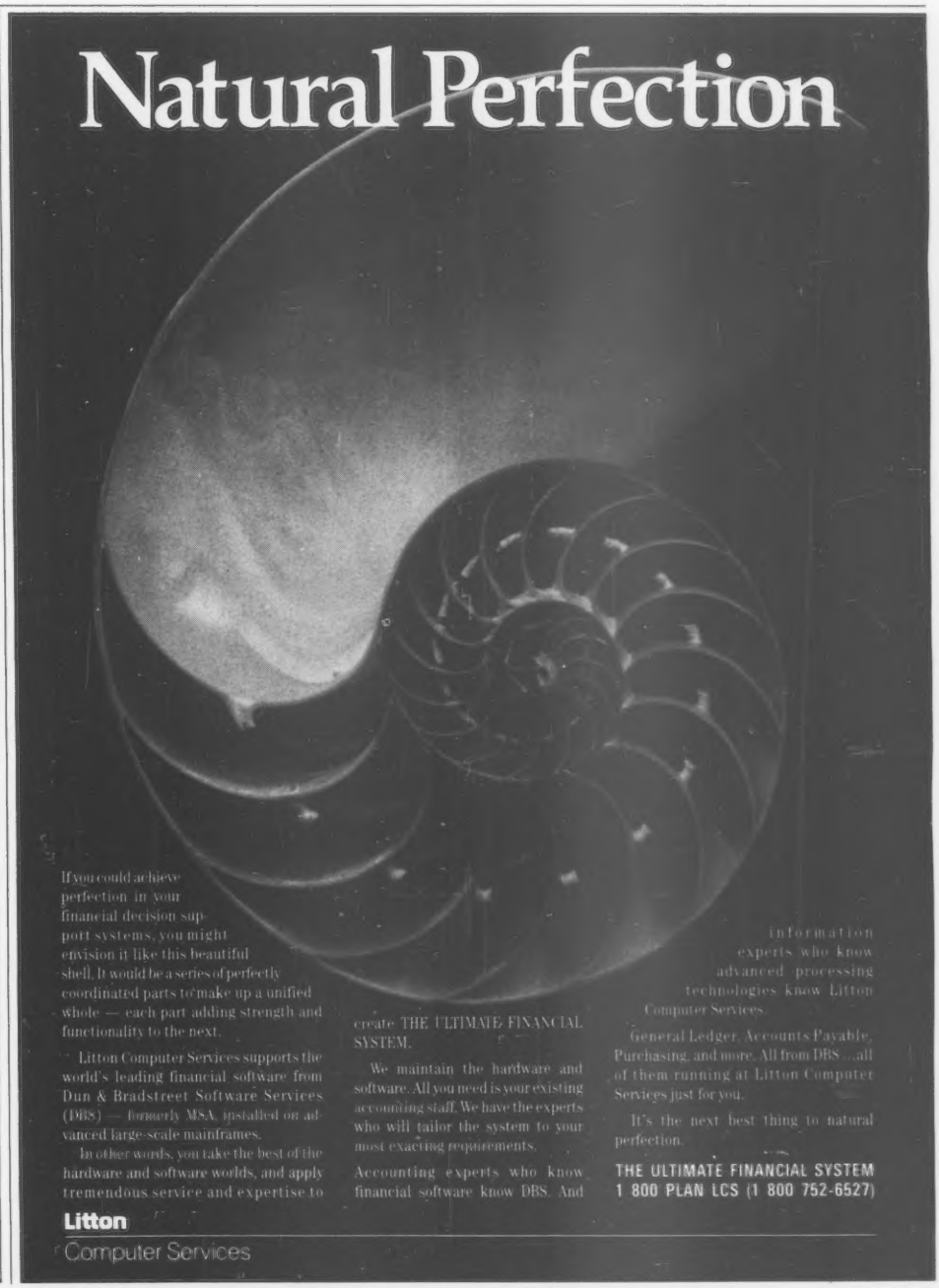

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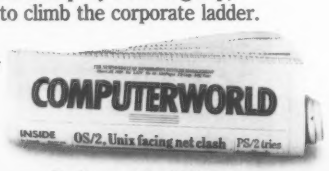

The Newsweekly of Information Systems Management

are considering EISs, others find the systems lacking. At Bellsouth Mobility in Atlanta, Steve Brake, controller at the company, says the EIS packages he encountered were too expensive.

"We're trying to see how to take the middle ground," Brake says, "and make information easy for people to get at." To do this, the company put together a financial analysis system using a PC-based graphics package. The information comes primarily from the mainframe financial system, as well as some statistical information on sales volumes and customers.

Almost as important as access to the right information is pre-

Bellsouth's Brake *built his own executive access*

sentation of that information. More and more, vendors are emphasizing the business use of graphics and imaging, especially with the dropping costs of imaging. Lawson is working on implementing imaging capability in its accounts-payable module, and several vendors are offering pull-down and customized menu features. Ross Systems recently released a Decwindows version of its Renaissance financials with these capabilities.

"I'm seeing more about imaging," says Chief's Metcalfe. "Once we get the base systems fully implemented, it will be one of the things we look into, along with other technologies applicable to the distribution environment, like scanning."

If users do not get graphics from their financial software vendors, they'll do it on their own. On the East Coast, a major insurance company is using data — some of which comes from a mainframe general-ledger hub — in developing its own system to link product pricing and performance measurement for planning. Outputs are available through a graphical user interface on networked PCs.

Farther off in the future — and in some ways the next step up from managerial and executive information access — is the inclusion of expert systems in traditional financial modules. While artificial intelligence is still just a concept to many vendors, some are researching or forming strategic partnerships to include expert systems with their applications.

As part of its acquisition of Cullinet Software, Inc., CA gained voice recognition (radio frequency) technology. The company is currently using this in a manufacturing module for shop-floor statistics. Dun & Bradstreet and Aion Corp. also announced an agreement two years ago to work together to analyze the potential for AI use.

Usurping and revamping the systems that have served as the baseline for business is not only cumbersome to developers, but also expensive to users and vendors alike. In the end, it will be up to both parties to get full business value out of accounting systems.

On their side, developers need users to communicate what it is they really need. To avoid getting the short end of the stick, users need to be more aware of what vendors promise and what they can deliver.

Users also need to communicate within the company to keep incompatibilities to a minimum. "Many times, organizations do not have a systems strategy that is tied to a business strategy, so decisions get made in isolation," Cote says.

What everyone is starting to agree on is the importance of providing the right access to the financial system. "If you can't get a handle on financial information, you're left in the dust competitively," Grupe's Henreid says.

"In our business, a single right decision can pay back the annual MIS budget several times over — and timely financial information is key to making right decisions." •

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PC modeling with Encore Plus, IFPS

BY GARY FREEMAN

PRODUCT FACE-OFF

Most financial planners today would not dream of working without a spreadsheet package. However, general-purpose spreadsheets were not designed to meet specific needs — let alone provide powerful analysis, report writing or application development tasks.

A decade ago, personal computer financial planning or "modeling" packages stepped in with powerful regression, time-series analysis and forecasting techniques. These products also import and export data more easily than traditional spreadsheets.

Beyond their analytical capabilities, these products also develop applications, allowing both technical and nontechnical users to build sophisticated planning models and turnkey applications.

Two noteworthy PC products that compete in this category are IFPS Personal Version 2.5 from Execucom Systems Corp. and Ferox Microsystems, Inc.'s Encore Plus Version 1.5.

Unlike other PC modeling packages that use macros for application development, these products program in an English-based language, which reduces errors in programming. While a study conducted by researchers at Carnegie Mellon University, the University of Toronto and the University of Michigan showed that it took 44% longer for experienced developers to build model statements with English-language financial planning spreadsheets than with traditional spreadsheets, the programmers made 75% fewer simple errors.

A DECADE AGO, personal computer financial planning or "modeling" packages stepped in with powerful regression, time-series analysis and forecasting techniques.

Typical users of these packages are people who want to upgrade from traditional spreadsheet applications and application developers such as comptrollers, accounting managers and staff financial analysts.

Probably the biggest difference between these two products lies in their model building rather than their analytical functions. Model building enables users to automate repetitive operations, document procedures and develop turnkey systems, including menus, user prompts and error detection.

Both products are rich in this area, but Encore's set of Exec functions — which number over 300 — is more versatile than IFPS' Command functions. For example, it offers more options for user prompts and menus.

Encore supports executive information systems (EIS) development with exception reporting and drill-down logic. Purchasers not disposed to tackle this kind of development from scratch may also buy a predeveloped EIS template separately.

Ferox also sells an EIS tool kit, which consists of an EIS application that the user can customize. This kit, however, can only be purchased separately.

On the other hand, IFPS is generally easier to work with at the modeling level. Since it is strictly nonprocedural, it is more flexible than Encore. IFPS, for instance, does not require model statements to be in any particular order.

With IFPS, you can also switch into a macro-language development environment. Users can edit macros to include more powerful functions, such as "if" statements and loops.

There seems to be no limit to either package's analytic functions. Both include matrix mathematics, conditional statements, logarithms, regression, time-series analysis and forecasts, combined with depreciation, net present value, internal rate of return, amortization and other financial functions. Both have graphics and report generator capabilities as well.

Encore, however, is stronger in its risk analysis offering. With its Monte Carlo simulator, a user can build a model, assign means and probability distributions to input variables and run a number of iterations to analyze variability in a results variable.

While IFPS can do other kinds of risk analysis, it does not offer the Monte Carlo simulation.

Because of their history, these two products offer different import and export

Freeman is a senior consultant at Deloitte Touche in Missouri.

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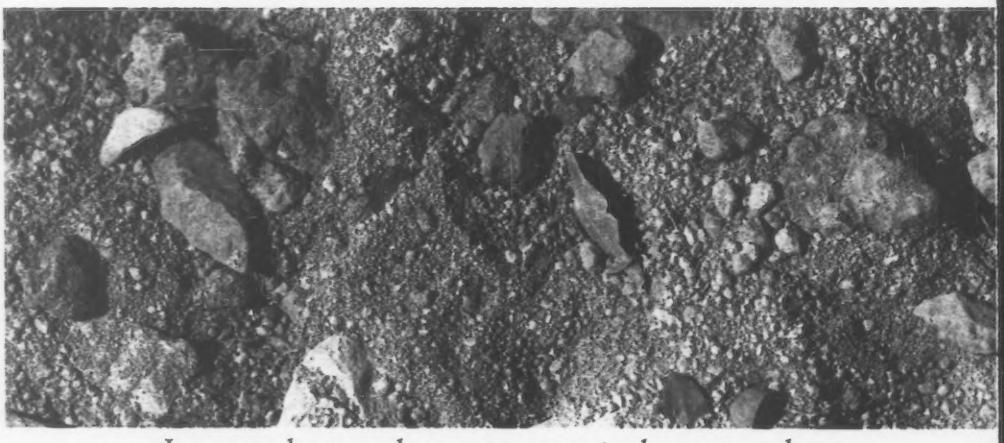

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This application heralds the introduction of a new concept in network management called the NYNEX ALLINK Network Management Solution. It will become a seamless, integrated network

capabilities. IFPS Personal, a relative of the mainframe IFPS financial planning system, can translate files *and* models to and from mainframe IFPS installations. This allows users to build an application on a PC and then run it on a mainframe.

Encore, on the other hand, is a standalone PC product and needs a customized interface to integrate mainframe files.

Encore can import data from and export data to Lotus Development Corp. spreadsheet files, whereas IFPS needs separately purchased utilities for each task. Encore also imports and exports ASCII and Supercalc files. The IFPS utility goes one step further than Encore in that it can import and export formulas as well as data within a 1-2-3 spreadsheet. Encore converts only data.

Although the programming languages in these products are not difficult to use, becoming familiar with the wide variety of functions available is a challenge in itself. To this end, both companies provide extensive reference manuals with their software. While IFPS' manual can become quite dry, Encore takes the time to interject some humor.

Help yourself

Both companies also supply "quick-start" tutorials for brief overviews, in addition to more comprehensive ones that examine more features. Ferox and Execucom also provide predeveloped sample models that demonstrate possible applications and programming techniques. These can be modified for real-life applications.

The Encore Plus purchase price of $895 includes one year of maintenance — including free updates and unlimited customer support — which costs $295 per year thereafter.

IFPS Personal's base price is $300 less, but customer support includes only three phone calls. Beyond that, support costs vary according to the number of calls per year. Up to 50 would be $350, and unlimited support is $2,500 a year.

The choice of product depends on which hat you usually wear: IFPS is easier to work with for people at the modeling level because of its strictly nonprocedural modeling language. Encore is more powerful at the application development level, but because of that, it requires a higher level of programming ability. •

ASK THE VENDOR

We run a large variety of Lawson Pinstripe accounting applications whose report writers offer varying levels of flexibility.

We would like our accountants and payroll personnel to be able to create individualized reports from the wealth of information we have stored in our computers. Does your company currently provide any products that can help?

Dave Martin
Manager of Computer Services
Bay State Gas Co.
Canton, Mass.

LAWSON ASSOCIATES, INC.: In the third quarter of this year, we are planning to release a new module for our Android line of computer-aided software engineering products.

Called Microid, the product will allow personal computer users to produce on-line reports and conduct interactive queries with a variety of host-system databases. Users will be able to save report definitions or generate source code from them for production use on the host.

I have installed EMS, a financial database management system from Economic Sciences, at some client sites. At one site, a department wants to add more detailed expense accounts to an existing financial model.

How can I modify the existing model? Do I have to specify exactly where the new accounts and data should be placed?

Greta Johnson
Independent Consultant
Minneapolis

ECONOMIC SCIENCES CORP.: On EMS, you can create and store new data series by entering the data interactively from a terminal or from disk files. These can be revised, and you can also add new numeric values to the end of the series.

To add new equations to an existing model, the Equation command must be used, which stores the algebraic representation of a relationship between the variables.

The equations can include arithmetic functions, such as logarithm and percentage change; financial functions, such as net present value and return on investment; and alternate computations that take the form of if/then/else statements.

An equation can be solved by itself, or it can be included with other equations in a model. When the model is created or revised, EMS automatically reorders the equations into blocks for solving the model in the most efficient way.

The equations can be in simultaneous or recursive block form.

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DEC, IBM midrange favorites

The following are the top five general-ledger accounting packages for IBM and Digital Equipment Corp. midrange platforms, as ranked by Computer Intelligence, Inc., a market research firm in La Jolla, Calif. The packages were ranked by market share.

While the systems can run on platforms other than the VAX, Application System/400 and System/34, 36 and 38 series, the information listed is specific to these machines.

DEC
VAX

1. Ross Systems, Inc.
(415) 856-1100
Renaissance General Ledger
Renaissance can interface with Access Technology, Inc.'s 20/20, Lotus Development Corp.'s 1-2-3 and any spreadsheet that accepts Data Interchange Format (DIF) files.

It works with DEC's All-In-1 and RDB as well as Relational Technology, Inc.'s Ingres databases. Customized report writing and graphics are available via an interface with products from Access Technology.

Other features include intercompany and multicurrency accounting, cross-product and financial report writing and flexible accounting controls.

The maintenance fee is 15% of the list price, which ranges from $30,000 to $80,000.

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2. MCBA, Inc.
(818) 242-9600
MCBA Classic
MCBA Classic is sold almost exclusively through authorized resellers. Spreadsheet, word processing and database interfaces are available through reseller modification.

Maintenance price also varies by reseller. The base price ranges from $995 to $8,000.

.....

3. Ask Computer Systems
(415) 969-4442
Manman/GL
Manman/GL can interface with DIF spreadsheets, 20/20, 1-2-3, Lotus' Visicalc, Multicalc, Microsoft Corp.'s Excel and Informix Software, Inc.'s Wingz. It does not interface with any word processing programs and works with Hewlett-Packard Co.'s Image and DEC's DBMS databases. Features include customized report writing and multicurrency consolidations with eliminations.

The maintenance fee ranges from $2,256 to $5,040, and the base price ranges from $13,500 to $50,375.

.....

4. Collier-Jackson, a Compuserve Co.
(813) 872-9990
World Class series
The system supports 20/20, Lotus' Symphony and 1-2-3, as well as other spreadsheets. It does not interface with any word processing packages.

World Class works with HP's Image and DEC's RMS databases and allows customized report writing. It produces bar, line, pie and XY graphs and can integrate with accounting and human resources systems. Other features include single-keystroke "express navigation," multicompany, division and department capability, flexible, user-defined accounting controls and audit trails.

Maintenance costs 12% of the license agreement price, and the basic price ranges from $18,000 to $60,000.

.....

5. Computer Associates International, Inc.
(800) 841-3734
CA-General Ledger
The package interfaces with CA's Supercalc 5, Supercalc 5/PC and Lotus' 1-2-3 spreadsheets. It works with the CA-Datacom/DB database and any word processing programs via a personal computer link. Customized report writing is permitted, and bar, line, pie and XY graphs are available through Masterpiece-GRO.

Maintenance fee is 15% of the $18,000 to $47,000 base price.

IBM
AS/400, System/34, 36, 38

1. J. D. Edwards & Co.
(303) 773-3732
JDE General Ledger
JDE interfaces with 1-2-3 and JDE proprietary spreadsheets. It supports any IBM Officevision word processing package and JDE databases and permits customized report writing.

Other features include multi-industry, multilingual, multicurrency and budgeting capabilities, as well as flexible account coding, changeable charting of accounts, cost-allocation support, global account recoding, multiple fiscal-year accounting, automatic entry reversal, reconciling, consolidating and flexible reporting.

Maintenance is 12% of the list price of $8,000 to $70,000.

.....

2. Software System Associates, Inc.
(312) 641-2900
BPCS General Ledger
The package works with any spreadsheet, word processing package or database that runs on the AS/400. Customized report writing is permitted, along with bar, line, pie and XY graphs. Other features include integration with other BPCS products, including accounts payable and receivable, cash management and multicurrency and currency translation. It provides international support and multicompany and multicurrency ledgers.

There is no maintenance fee. The basic price is between $6,000 and $30,000.

.....

3. IBM
Contact local sales office
AS/Entry CMAS
There are seven different modules in the AS/CMAS, including a spreadsheet, accounts payable, job costing, payroll and labor costing.

Monthly license fee is $159. The one-time basic license charge is $1,790.

AS/400 CMAS II
This system has seven modules, including a general-ledger package, a spreadsheet, an integrated database, job costing, accounts payable and revenue accounting.

The monthly license charge is $316, and the basic primary license fee ranges from $2,505 to $6,905. The annual license charge ranges from $324 to $891.

AS/400 DMAS
The system provides two general-ledger programs and nine other modules, including a spreadsheet, the AS/700 Officevision word processing package, an integrated database, billing, accounts payable and receivable, inventory management, sales analysis and purchasing.

The monthly license charge is $179 for GL Model 5729-D47, which has a one-time license fee of $2,545. GL Model 5728-D47 costs $273 per month, with a one-time charge ranging from $2,160 to $5,955.

AS/Entry MAPICS II
Two general-ledger models are available in this accounting system, along with a spreadsheet, integrated database, production control and costing, inventory management, order entry, invoicing accounts receivable and payable and sales analysis.

The monthly license fee costs $193 for GL Model 5729-M77, which has a one-time basic license charge of $2,555. GL Model 5728-M37 carries a monthly charge of $262 for a basic one-time price that ranges from $2,655 to $6,670.

AS/400 MAPICS II
The general-ledger module is part of 18 other programs, including a spreadsheet, integrated database, accounts receivable and payable, inventory management, sales analysis and invoicing.

The monthly license fee is $262, and the one-time base license charge ranges from $2,655 to $6,670.

AS/400 MAPICS/DB
A general-ledger program is available under this system, along with an integrated database, spreadsheet and many of the same modules that come under MAPICS II. However, the 17 programs in this system are linked more closely with the underlying database to facilitate queries and other database-related functions.

The base monthly charge is $300, with a primary license fee between $2,515 and $6,290.

.....

4. Computer Associates
(800) 841-3734
CA-General Ledger
See No. 5 ranking under DEC.

.....

5. Lawson Associates, Inc.
(612) 879-2633
Pinstripe General Ledger
The product supports 1-2-3 and Symphony spreadsheets. It does not interface with any word processing packages but works with any native database. It allows customized report writing and bar, line, pie and XY graphs. Other features include interface capabilities with Lawson's computer-aided software engineering tools — Android and Microid — and other programming tools, as well as source-code management and application windowing capabilities via Lawson's environmental tool, Universe.

There is no maintenance fee, and the base price is $20,000. •

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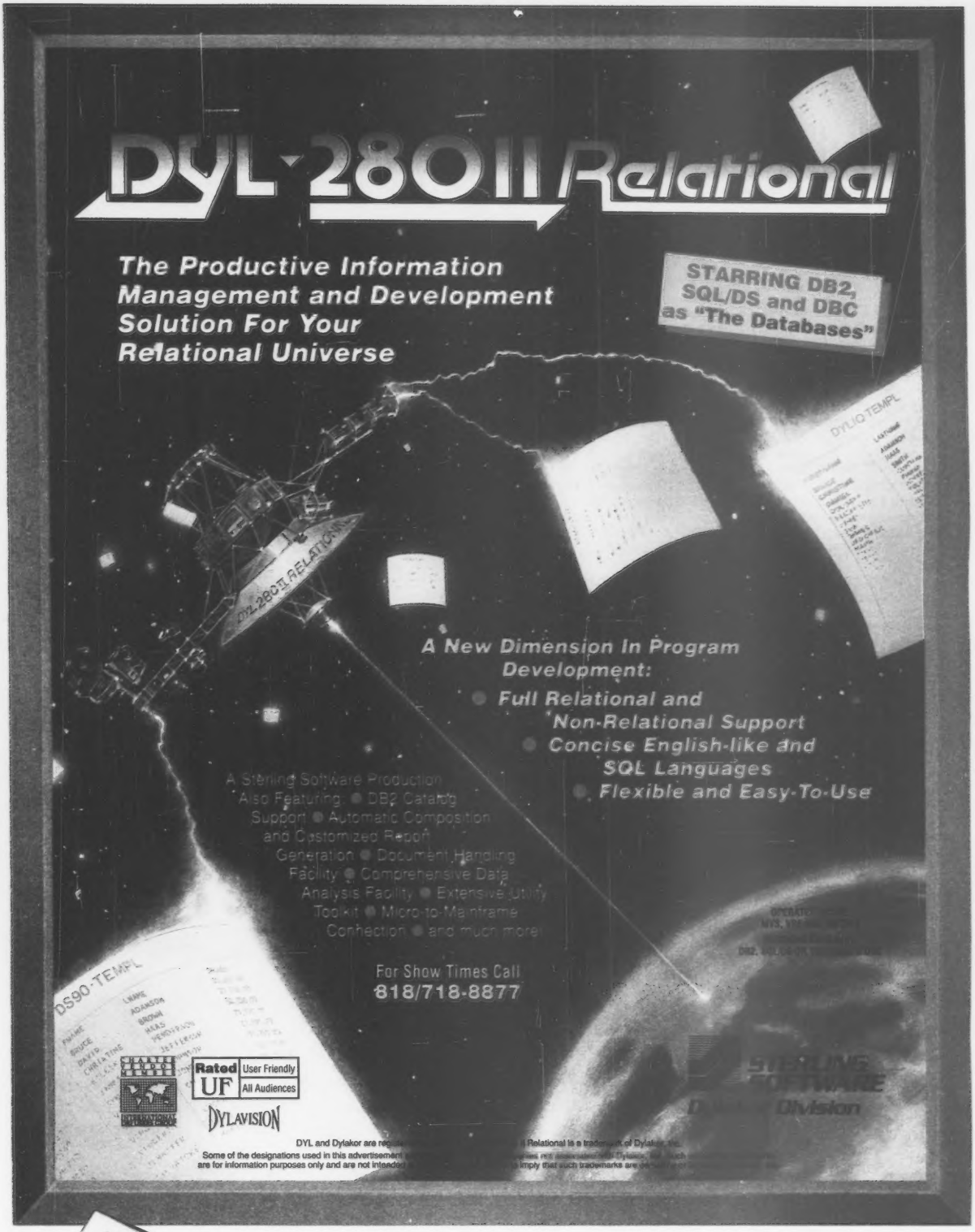

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BUYERS' SCORECARD

Global rings up lead in ledger ratings

BY MICHAEL L. SULLIVAN-TRAINOR

Pitted against the titans of accounting software, Global Software, Inc., a $23-million enterprise, differentiates itself by stubbornly sticking to its knitting.

In the face of Computer Associates International, Inc.'s (CA) acquisition binges and the merger of Management Science America, Inc. (MSA) and McCormack & Dodge (M&D) — both now part of Dun & Bradstreet Software — Global continues to maintain a strong mainframe general-ledger user base (10% of the market) by paying attention to such details as customer support.

Of the four top mainframe general-ledger packages rated by the 280 users surveyed, Global's offering received the highest overall score. The respondents rated only the software they are currently using, with a minimum of 70 users rating each package. Total scores for each package were based on a weighted combination of the numerical ratings of all 21 criteria (see methodology next page).

Global ranked highest in the nuts-and-bolts areas of accounting applications: availability and crash recovery, ease of use and service and support. Users say that the company's support service for installation, called Software Walkthrough, provides above-average assistance in getting the package up and running.

"A lot of vendors will run a sample of someone else's data and say, 'This is what your system will look like,' " says Bob Bulliard, program supervisor at Lafayette General Medical Center. "Global took our data to their Raleigh, N.C., site and ran it for us so we could iron out the requirements."

M&D's general-ledger package received the second highest overall user rating, scoring 41 points to Global's 43. However, users gave M&D's package a slight edge over Global in meeting current business needs — the criterion most important to users. The package was rated significantly higher overall in new technology areas, such as the relational database interface.

MSA's general-ledger package rated one point behind that of its merger partner in the overall score and scored higher than the other packages in custom report generation, effective training and integrating with other modules.

CA's general-ledger product, which came up four points short of the highest score, topped the field in terms of the portability of its programming language and scored strong second-place ratings in overall performance and pricing.

Respondents rated the basic functions of the products as more important than the hot technology areas. They gave the vendors superior marks overall in meeting primary requirements. However, lower ratings were assigned to new areas such as expert systems, networking and adapting to distributed technologies.

Sullivan-Trainor is a *Computerworld* senior editor, features.

COMPUTERWORLD BUYERS' SCORECARD

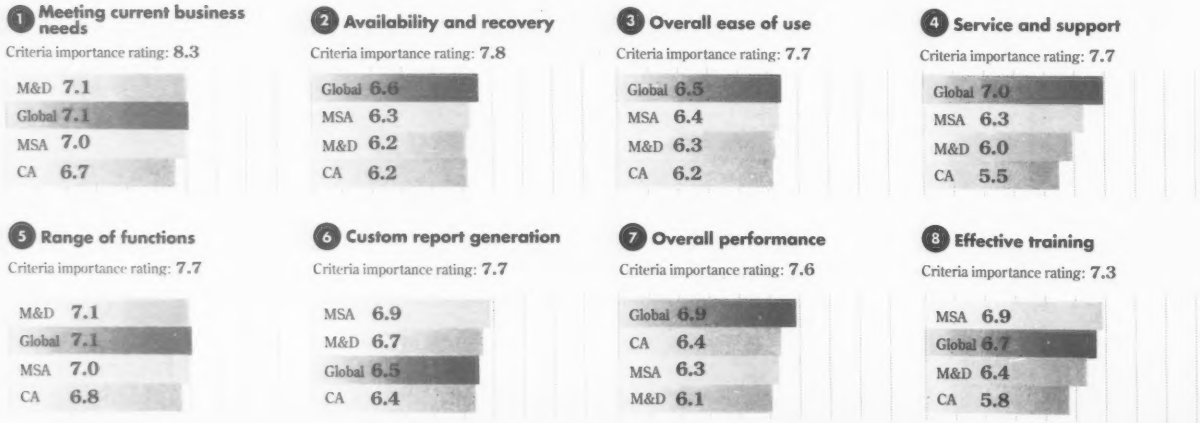
A summary of the highest and lowest ratings shows the most and least effective aspects of each product

Product: General Ledger	Score	Strengths (Top three ratings:)	Weaknesses (Bottom three ratings:)
Global Software's GL (Response base for all products: 70)	43	First-place finishes: 9 Availability & recovery Ease of use Service and support	Fourth-place finishes: 0 Custom report generation Integration with other modules Graphics analysis features
McCormack & Dodge's GL	41	First-place finishes: 6 Meeting current business needs Range of functions Integrating with other applications	Fourth-place finishes: 1 Overall performance Availability & recovery Ease of customization
MSA's GL	40	First-place finishes: 5 Custom report generation Effective training Integrating with other modules	Fourth-place finishes: 6 Installation and maintenance price Ease of installation Ease of customization
Computer Associates' GL	39	First-place finishes: 1 Portability of programming language Overall performance Installation and maintenance price	Fourth-place finishes: 14 Meeting current business needs Availability and recovery Ease of use

Key ratings

Global Software's General Ledger package ranks first in four of the categories users consider most important. McCormack & Dodge is first in the No. 1 criterion for users — meeting current business needs

Criteria presented in order of importance to all users (based on a scale of one to 10)



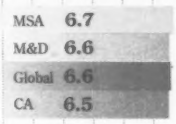
A closer look

Global and M&D continue to capture the highest ratings for remaining criteria such as networking, the RDBMS interface and adapting to distributed systems

Criteria presented in order of importance to all users (based on a scale of one to 10)

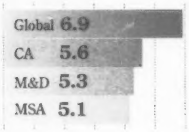
9 Integrating with other modules

Criteria importance rating: 7.2



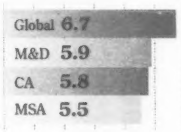
10 Reasonably priced installation and maintenance

Criteria importance rating: 7.2



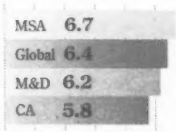
11 Ease of installation

Criteria importance rating: 6.9



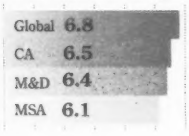
12 Adaptability to tax system changes

Criteria importance rating: 6.6



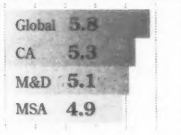
13 Enterprise tracking

Criteria importance rating: 6.4



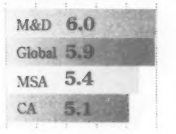
14 Ease of customization

Criteria importance rating: 6.4



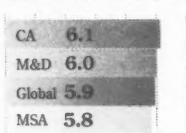
15 Integration with other applications

Criteria importance rating: 6.3



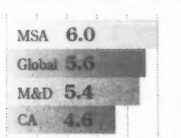
16 Portability of programming language

Criteria importance rating: 5.9



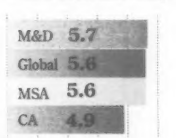
17 Expert system functions

Criteria importance rating: 5.8



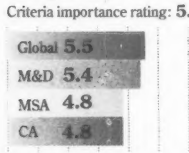
18 Adaptability to networking

Criteria importance rating: 5.7



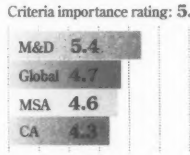
19 Adaptability to distributed systems

Criteria importance rating: 5.5



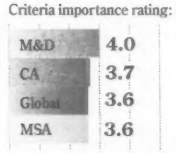
20 Interface with relational databases

Criteria importance rating: 5.3



21 Graphic analysis features

Criteria importance rating: 5.0



Loyalties

Would you buy the product again?

(Reasons based on most frequently stated responses)

Global

Number of respondents

Response base: 69

M&D

Response base: 67

MSA

Response base: 70

CA

Response base: 70

"Verbatim"

Responses are based on the most frequently stated answer to: "What do you like best/least about this product?"

Global Software

Likes	Dislikes
"Great reporting and enterprise features"	"Resource hog"
"I like the varied accounting features and structure"	"Not a real-time system"

McCormack & Dodge

Likes	Dislikes
"Flexibility"	"Resource hog"
"Very user-friendly"	"Very costly to run"

MSA

Likes	Dislikes
"Excellent reporting capabilities"	"Very costly to run"
"It does everything we need"	"Difficult to use"

Computer Associates

Likes	Dislikes
"Excellent reporting capabilities"	"Poor support from CA"
"Functionality"	"Difficult to customize our reports"

METHODOLOGY

Products rated in *Computerworld's* Buyers' Scorecard on general-ledger software were chosen on the basis of three criteria: platform, the package's installed base and the market share of the vendor's complete suite of accounting software. The software had to run on IBM and compatible mainframes; be one of the top four general-ledger packages for those machines, in terms of installed base; and be part of an accounting system with a leading share-of-market position.

The ratings were based on telephone surveys conducted by First Market Research in Austin, Texas. Lists of users of each product were provided by objective nonvendor sources. The survey respondents were randomly chosen from these lists. Responses reflect experience with various versions of the products, but over 90% had been using their respective general ledgers for two or more years, and 53% reported over five years of use.

The comparison involved phone survey results from a minimum of 70 respondents for each product. The weighted scores were computed by multiplying the mean scores all users assigned to each criterion by the mean scores each user group gave to their own products.

Result tabulation was performed by IDG Research Services in Framingham, Mass. Questionnaire development and results analysis were accomplished with the assistance of financial software consultants and users.

ACKNOWLEDGMENTS

CW would like to acknowledge the assistance provided by the following individuals and organizations in the preparation of this month's Buyers' Scorecard: Clare Gillin, International Data Corp.; Peter Kastner, The Aberdeen Group; Gary Silver, Deloitte & Touche; Susan Thomas, Thomas Associates; Computer Intelligence Corp.; and Installed Technology International.

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Unix spreadsheets

VENDOR	PRODUCT	VERSION OF UNIX	MEMORY REQUIRED (BYTES)	MATRIX SIZE (ROW x COLUMN)	ARITHMETIC FUNCTIONS	FINANCIAL FUNCTIONS	SPREADSHEET INTERFACES	WORD PROCESSING PACKAGE INTERFACES	DATABASE INTERFACES	INTERNAL GRAPHICS CAPABILITIES	FILE CONSOLIDATION	OTHER FEATURES	REAL-TIME CAPABILITIES	TRIAL PERIOD	BASE PRICE
Access Technology, Inc. (508) 655-9191	20/20	BSD, SCO Unix, SunOS, System V, Ultrix	1M	8,192 x 1,000	Financial,[1] logical, mathematical, statistical	Budgeting, forecasting, job costing, modeling	Excel, 1-2-3, Multiplan, Symphony, Visicalc	Wordmarc, Word-perfect	Informix, Ingres, Oracle, Sybase	Bar, line, pie, XY graphs	Yes	Area locking, command stacking	Yes	30 days	$600-$12,000
Information Builders, Inc. (212) 736-4433	Foccalc	OSX, Sinix, System V, Tower OS	650K	8,192 x 8,192	Financial, logical, mathematical, statistical	Budgeting, forecasting, modeling	20/20, 1-2-3	None	Focus	Bar, line, pie, stacked, XY graphs	Yes	Area locking, command stacking	Yes	None	$870-$8,970
Informix Software, Inc. (415) 926-6300	Wingz	A/UX, Motif, Next Step, Open Look	2M-8M	32,768 x 32,768	Mathematical, numerical, statistical	Budgeting, forecasting, job costing, modeling	None	None, text-processing function built in	Informix On-Line and SE	3D; bar, line, pie, XY graphs; hi lo, step, scatter, polar, mixed	Yes	Automatic save	No	None	$399-$699
Lotus Development Corp. (800) 343-5414	1-2-3 for Sun	SunOS 4.0, 4.1	4M	256 x 256	Factory automation, financial, logical, mathematical, statistical	Budgeting, forecasting, job costing, linear programming, modeling	20/20, SCO Professional, Q-Calc	Word-perfect, Interleaf, Frame	Ingres, Oracle Sybase, Unify, user-customizable	3D; area, bar, closed-open, hi-lo, line, mixed, pie, XY graphs	Yes	Catalog description, command stacking	No	180 days	$695
Mosaic Software, Inc. (617) 783-2984	Twin/Ux	System V, BSD	1M	8,192 x 256	Financial, logical, mathematical, statistical, string	Budgeting, forecasting, job costing	Any in text, DIF or CSV format	Any in text, DIF or CSV format	Any in text, DIF or CSV format	3D; bar, line, log, pie, pie-bar, scatter XY graphs, mixed	No	Date/time	No	30 days	$395
Olympus Software, Inc. (801) 572-1610	Ultra Calc II	BSD, System V, Ultrix	4M	32,000 x 32,000	Financial, logical, mathematical, statistical, string, table	Budgeting, command history recall, forecasting, job costing, modeling	1-2-3, Multiplan	Word-perfect	Informix, Ingres, Oracle, Sybase, Unify/Accell	Area, bar, hi-lo, line, pie, regression, XY graphs, mixed	Yes	Area locking, date/time	No	30 days	$695-$15,000
Quadratron Systems, Inc. (805) 494-1158	Cliqcalc	BSD, DG/UX, HP/UX, System V, Ultrix, Unix 7, Xelos, SCO Xenix	640K	8,192 x 256	Financial, logical, mathematical, statistical	Budgeting, forecasting, job costing, modeling	1-2-3 Release 2	Cliqword	Informux, Oracle, Sybase	Bar, line, pie, XY graphs	Yes	Area locking, automatic save, command stacking, Lotus-like commands	No	Contact vendor	$495+
Quality Software Products Co. (213) 410-0303	Q-Calc Standard with Quality Graphics	BSD, Interactive, SCO Xenix, SunOS, System V	2M	8,192 x 256	Financial, logical, mathematical, statistical	Budgeting, forecasting, job costing, modeling	1-2-3 Release 2.01	Any in ASCII format	Any in ASCII format	Bar, stacked bar, commodity, line, pie, XY graphs	Yes	Area locking, automatic save, command stacking	No	30 days	$750
Software Innovations, Inc. (603) 883-9300	VC 2	BSD, System V and derivatives	120K	1,024 x 32,767	Financial, logical, mathematical, statistical	Budgeting, forecasting	Any that can be input from a Unix file	Any that can be input from a Unix file	Any that can be input from a Unix file	Bar graphs	Yes	Area locking, automatic save, catalog description, command files, command stacking, user-defined commands	Yes	None	$995, includes C source code
SSC, Inc. (206) 527-3385	Publicalc	System V, SCO Xenix	100K	100 x 100	Financial, logical	Budgeting	None	None	None	None	No	None	No	None	$50 for source code, $10 for binary code
The Santa Cruz Operation, Inc. (408) 425-7222	SCO Professional	SCO Xenix, SCO Unix, SunOS	2M	1,024 x 8,192	Financial, logical, mathematical, statistical	Budgeting, forecasting, job costing, modeling	1-2-3	SCO Lyrix, Microsoft Word	Any SQL	Bar, line, pie XY graphs	Yes	Area locking, command stacking	Yes	None	$595 for single user; $995 for multiuser
Unipress Software, Inc. (201) 985-8000	Q-Calc Real Time	BSD, SCO Unix, System V, Ultrix, SCO Xenix	1M	8,192 x 256	Financial, logical, mathematical, statistical	Forecasting, modeling, real time data acquisition and analysis	1-2-3	None	Sybase	Bar, commodity, line, pie, stacked, XY graphs	Yes	Command stacking	Yes	30 days	$1,495
Xerox Special Information Systems (800) 233-9055	Analyst	Any that supports Smalltalk 80	8M	Unlimited	Factory automation, financial, logical, mathematical, statistical	Modeling	None	Analyst Document System	Xerox Analyst	Bar, line, pie XY graphs	NP	Automatic save	Yes	None	$1,995

[1]In all instances, examples of financial functions are depreciation, amortization, net present value, rate of return and interest calculations, to name just a few. Mathematical functions are those used in basic math.

All of the products listed are stand-alone spreadsheets except 20/20 from Access Technology, Inc., Analyst from Xerox Special Information Systems and Foccalc from Information Builders, Inc., which are spreadsheets integrated with other applications, such as communications and database packages.

The companies included in this chart responded to a recent survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

A quick MVS tune-up

Invest two or three hours and tune your MVS compilers for better performance and lower costs

BY DAVID KIRK

Are you managing an MVS shop? Are you watching program development resource usage eat away at your capacity? Like many information systems managers, you're probably under the gun to hold costs down and make that mainframe box "last a little longer."

While optimizing current programs does help prolong system life, locating and correcting inefficient code is usually costly. For that reason, many shops trying to reduce overhead tend to focus on the biggest applications and on MVS itself.

While that approach can pay off, bigger savings are more likely to be found in a forgotten area: IBM compilers.

The reason is simple. Such compilers are typically configured for minimum memory allocation and use temporary work files to manipulate data that could otherwise be done in memory. This in turn degenerates physical I/O, which degrades the entire system and raises costs.

Good news: It's possible to correct several inefficient options offered by IBM compilers in little more time than it takes to read about it — and with big savings. By following a few simple tips, you can reduce CPU usage, I/O activity and elapsed time — all without compromising programmers and in less than two to three hours.

The reason the problem hasn't been solved before now is that several of IBM's language compilers are "smart." This means that the compilers assess available resources and adjust their processing steps accordingly.

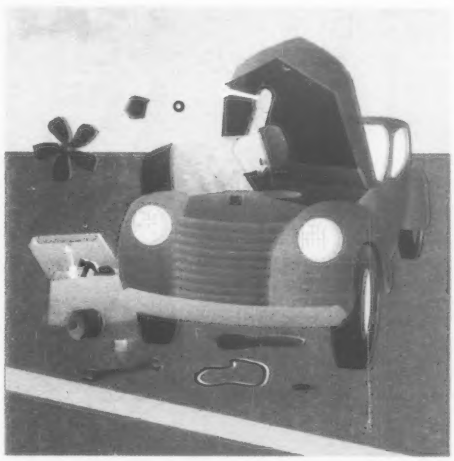
Even with small I/O buffers and memory allocations, the compilers still function, albeit with more overlay activity and use of disk work files.

Kirk is president of David Kirk Associates in Clay, N.Y., specializing in MIS training and productivity.

This kind of process is contrary to application program attributes, so there is a natural tendency to assume the programs wouldn't benefit from modifications as simple as changing a few IBM JCL entries.

This attitude has been perpetuated in recent years by IBM's language guides — some of which use language reminiscent of the early 1970s, when OS/MVT was running on a 512K-byte mainframe. (The Linkage Editor and assembler H guides give advice on reducing memory requirements, even down to 130K bytes, by increasing I/O.)

Needless to say, the economics of mainframes has changed in 20 years and so must the approach.



Tom Monahan

Because IBM ships software with default configurations that work on any mainframe, it's unlikely that your compilers are using your resources effectively.

If you're thinking, "If it's that easy, I'm sure my staff has done it," think again. In many shops, no one is accountable for making language processors more efficient. Systems programmers keep the software functioning, measurement specialists are tuning MVS and major applications, and development center personnel are working on productivity tools.

In addition, programmers are not complaining because the software functions properly. The increased costs and elapsed times for each compilation and test are often too small for a programmer to detect or care about.

Increasing blocking factors on sequential files and eliminating unnecessary features of the compilation process is the best way around the problem.

These simple steps do not require the services of a senior measurement guru; any programmer familiar with JCL can perform them. Although the steps differ for each language product, they follow this approach:

1) Specify how much memory the product can use (the JCL REGION parameter).

2) Specify how much of that memory should be allocated to I/O buffers (usually an option supplied on the JCL PARM statement).

3) Adjust BLKSIZE and SPACE allocations on DD statements the product uses (these are usually within the JCL PROC for the product).

4) Review language options that can be specified via JCL and specify those that reduce resource use.

Here are some specifics for Cobol and the Linkage Editor:

• OS/VS Cobol and Cobol II. These two languages share some common approaches to minimizing I/O and improving memory use.

First, set the REGION parameter to 1,500K.

Second, adjust the SIZE and BUF parameters on the PARM statement to SIZE = 1,500K (SIZE = MAX for Cobol II) and BUF = 170K (BUFSIZE = 170K for Cobol II).

Third, adjust the DD statements as follows: SYSPRINT — Set BLKSIZE = 121 if using JES and to 6,050 if not. SYSLIN — Set BLKSIZE = 3,200. All files — Set SPACE to cylinders, not tracks.

The following two data sets require more

• Performance losses are small but add up

• Reduce CPU usage and I/O activity

• The secret: Reconfigure 'smart' compilers

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No-cost solutions

There are several other ways to get the most out of your programming function without spending a dime:

• **Eliminate paper output from productional compiles.** Saving productional compiles on paper made sense 15 years ago, when everything was done in batch.

Today, however, nearly everything is on-line, so why bother? Why walk down the hall to a library, sign out the documentation and scribble on it when nearly all programmers have access from a terminal?

Be forewarned that reducing paper costs is an all-or-nothing proposition. Taking this route may upset many on your staff who feel secure with rows of binders and files filled with computer listings. You either commit to the goal and mandate it or you lose in the attempt.

A few shops have acknowledged that the source code is available via IBM's TSO and the cost of recompiling the minority of programs that abend is much cheaper than producing output for every program.

Shops taking this route will be rewarded with big savings in paper, filing and distribution costs.

• **Ask programmers what bothers them.** Your programmers are your company's best way to spot inefficient processes and productivity roadblocks. A quick way to start things rolling: Simply ask programmers what keeps them from doing their jobs better and more quickly. The problem may be too many tools, the wrong tools, inadequate training or the systems available.

Lots of little things come up: Someone needs a desk lamp. Another's terminal faces a window and the glare prevents him from seeing well. Another's IBM 3270 terminal screen has faded so much, it's nearly impossible to read. So a maintenance person tweaks a screw in back to brighten it. The whole process takes two or three minutes and basically costs nothing.

• **Form an action committee.** At one firm, a volunteer team of programmers hung a chart in the conference room listing every software package used by the company. Each programmer was given 10 stick-on dots. They were told to affix blue dots to programs they liked or wanted to know more about. Similarly, they would stick brown dots on those programs they didn't like or that got in the way. Limiting the number of dots to 10 forced the programmers to prioritize.

The whole process quickly showed where problems were. Some software was just plain awful; other packages had screens people didn't understand. Not only did people hang dots, but they hung their own charts with comments and unsolicited advice. Simple ideas work.

DAVID KIRK

work and are outside the goal of reducing costs quickly and cheaply (you may want to investigate them later):

SYSLIB — Copy and reblock this partitioned data set to a larger BLKSIZE. (Recommended settings are 23,680 for the 3380 direct-access storage device (DASD) and 19,040 for the 3350 DASD.) This probably requires support from a systems programmer, but if your shop uses COPY statements, the savings could be considerable.

SYSIN — The SYSIN data set generally preexists, having been defined and used with TSO/ISPF or a similar product. BLKSIZE should be 12,000 or higher. Distributing new guidelines on data set allocation should do the trick. (If you use Pansophic Systems, Inc.'s Panvalet or a similar product, see below for more information.)

IT IS POSSIBLE to correct several inefficient options offered by IBM compilers in little more time than it takes to read about it — and with big savings.

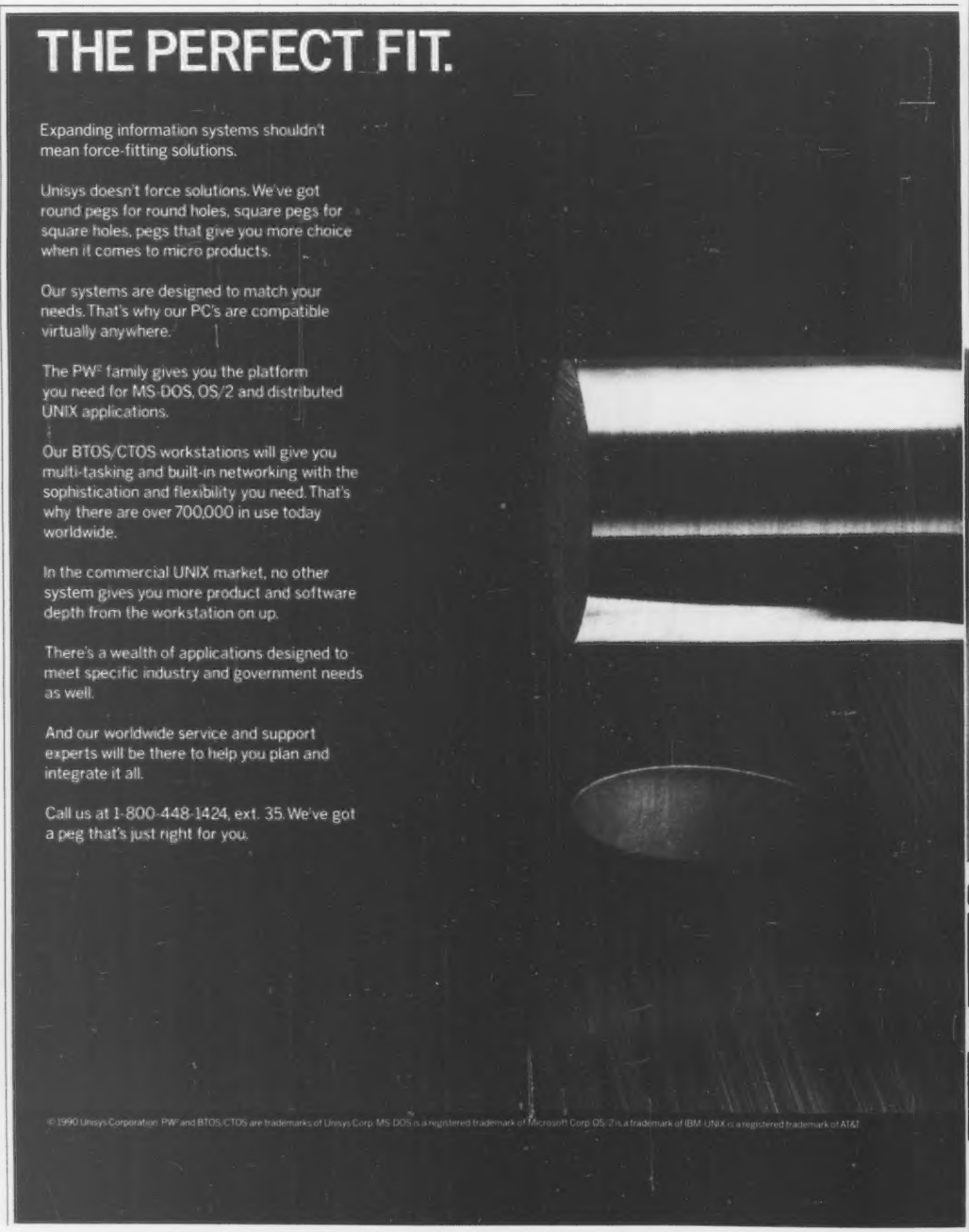
Fourth, specify these compiler options for minimum resource use (these go with the SIZE and BUF options mentioned earlier). The commands for OS/VS Cobol are as follows: NOOPTIMIZE CSYNTAX. The commands for Cobol II are as follows: NOOPTIMIZE NOCOMPILE(E) NOFASTSRT. (Note: Use OPTIMIZE for production.)

When testing a program, it makes little sense to invest the CPU cost to optimize a compilation (OPTIMIZE/NOOPTIMIZE) that will end as a functional test, an abend or a syntax error.

Instead, spend the resources when the program is migrated to production. That's where the savings are from this option.

To continue compiling a program after you detect serious errors (CSYNTAX/NOCOMPILE) doesn't make much sense. This option specifies not only to continue searching for syntax errors but also to abandon efforts to produce object code.

The FASTSRT (fast sort) option in



Cobol II has so many restrictions that it must be validated at compilation time (that will restrict you at runtime). It also should be turned off.

• **Assembler.** Assembler isn't a smart compiler, but it can still benefit from changes. Increase REGION to at least 1,200K and follow the above suggestions for SYSPRINT, SYSLIN, SYSLIB and SYSIN. You should also specify a BLKSIZE for SYSUT1 using the guidelines for SYSLIB (this is an overflow work file).

• **Linkage Editor.** The Linkage Editor, one of IBM's most fault-tolerant products, is able to make guesses about many issues and allow an executable program to be generated. That may be why it receives less attention than almost any other software package.

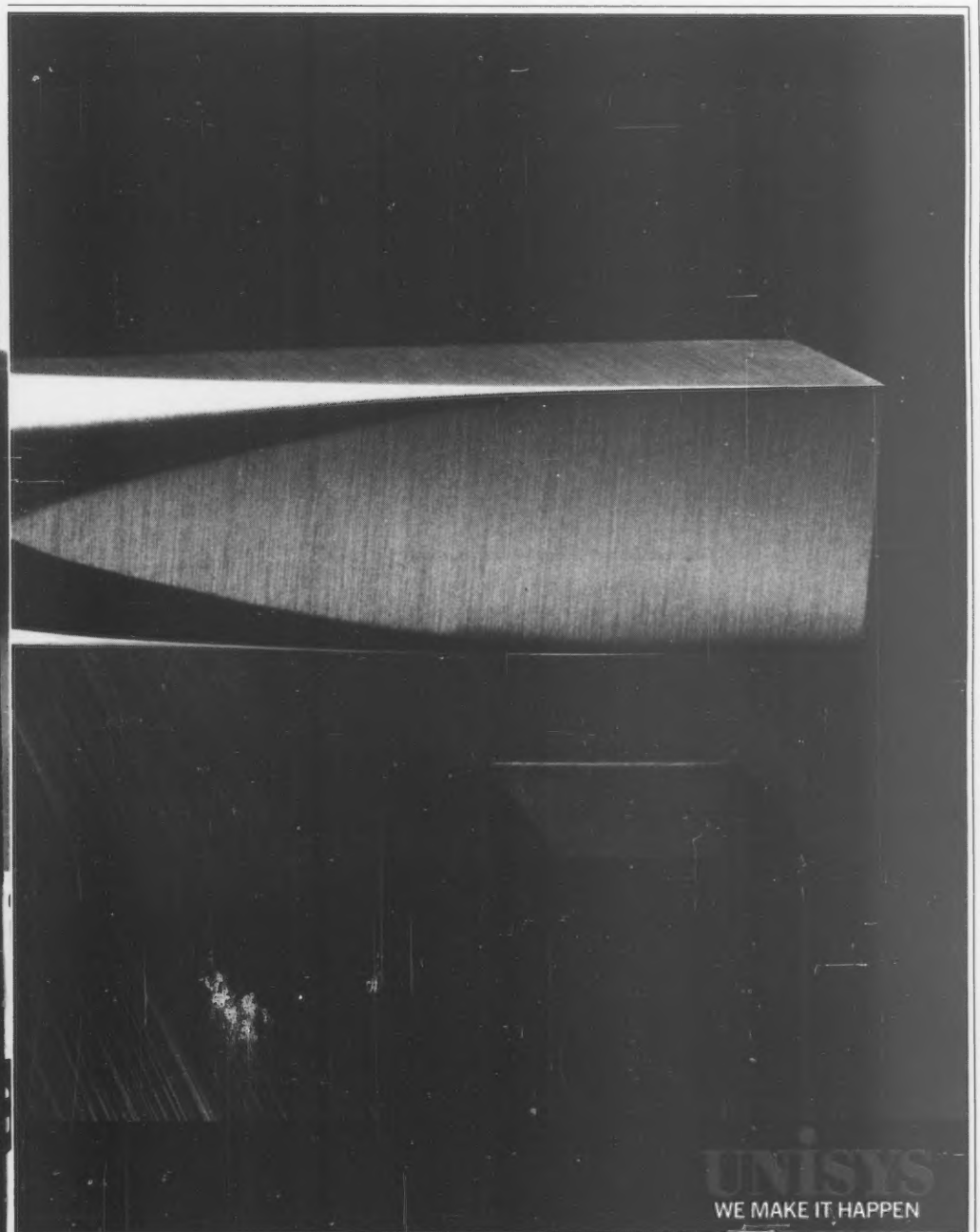
BECAUSE IBM SHIPS software with default configurations that work on any mainframe, it's unlikely that your compilers are using your resources effectively.

Decisions here affect not only the resource usage for the link to occur but also affect productional fetch overhead. (Program Fetch is the process in MVS of loading a new program into memory and initiating it. If a load module was stored on a disk in small blocks, the number of I/Os to load the program may not affect overhead much but could easily alter the response time for on-line transaction modules.)

Fine-tuning the Linkage Editor could take days or weeks. Instead, the following are some brute force options that will get benefits quickly:

Set the REGION to 1,500K. Then add SIZE = (1,400K, 800K) to the PARM. Change the SYSPRINT as you did for Cobol (above). These numbers may be more (or less) than optimal for you, but they are at levels significantly above the IBM defaults.

As with the compilers, the Linkage Editor not only optimizes use of memory and I/O buffering but also attempts to build the load module in memory, if there



Recent MVS, compiler news

• **Expedite/MVS enhanced.** In March, IBM announced Expedite/1 MVS Host, a new version of its Systems Network Architecture (SNA) Host Information Exchange Interface. The renamed program is part of the IBM Expedite Communicator series of interface products.

The licensed program can be installed in an SNA host processor to communicate with IBM Information Network's Information Exchange service. Release 3.0 supports international messaging, permanent alias tables, permanent distribution lists, audit reports and address validation.

• **New functionality for Ada compilers.** IBM enhanced its Development System for the Ada Language System/370 compilers. Performance boosts include improved tasking execution time and improved compiler and binder throughput for the MVS Compiler.

Ada MVS Compiler and the Ada MVS Run Time Library will now run in the MVS/ESA environment Version 3 for JES2 and JES3. The Ada binding to Graphical Data Display Manager (GDDM) will operate with GDDM Version 2, Release 2. GDDM/VM and GDDM/VMXA are used to bind with the VM Ada products; GDDM/1 MVS is used to bind with MVS Ada products.

Pricing for the Ada Compiler under VM/CMS ranges from $18,560 to $207,650. Monthly licenses start at $619 and go up to $3,845. The Ada VM/CMS runtime library costs between $1,855 and $20,840. Monthly licenses range from $63 to $386. The Ada MVS Compiler costs between $81,960 and $207,650. Monthly licenses are $1,705 to $3,845. The Ada MVS Run Time Library costs between $8,195 and $20,840. Monthly licenses are $173 to $386.

• **MVS gets multitasking.** IBM C/370 Compiler and Library Version 1, Release 2 let C/370 applications run in the CICS/ESA 3.1 environment. The products also enable users to create multitasking applications in the IBM MVS/XA and MVS/ESA environments.

The products support interlanguage calls with IBM System/370 assembler H and VS Cobol II. The compiler provides packed structures and unions and the ability to dynamically load modules that contain Fortran, VS Cobol II, PL/1 and assembler H routines.

IBM's Systems Application Architecture Common Programming Interface for Level 2 has added packed structures and unions.

The C/370 Library for 9370s is available for a one-time price of $18,590, or $344 per month. The C/370 Compiler has a price that ranges from $3,320, or $110 per month, to $39,850, or $738 per month. Support for CICS/ESA Version 3, Release 1 is due in June.

is sufficient space.

With products such as Panvalet, optimization is less straightforward. First, make sure the output file (for Panvalet, this is PANDD2) has BLKSIZE specified as 12,000 or higher (see SYSIN, above). This directly reduces I/O in this step and in the following Cobol step.

If you use Cobol II, there is an additional improvement you can make, but it will probably be outside your shoestring project budget.

Here's the information so you can pursue it later:

Cobol II allows you to specify that source code will *not* come from SYSIN but rather from a subprogram to be written by you. This is documented in IBM manuals as the EXIT option. By writing a program to access Panvalet's well-documented access method, you eliminate 100% of the dual I/O caused by first executing Panvalet to write the source code to disk and then reading the source code back in to the compiler step. With the exit, you can then directly read the source from Panvalet.

INCREASING blocking factors on sequential files and eliminating unnecessary features of the compilation process is the best way around the problem.

What kind of benefits can you expect? With typical configurations, you should anticipate reducing physical I/O (shown on IBM listings as EXCPs) for the DD statements shown here by approximately 80% to 95%.

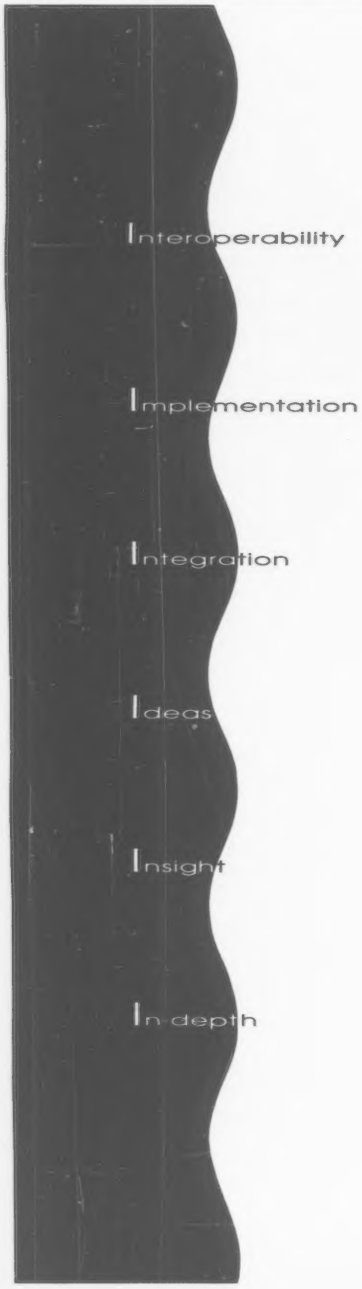
DD drops

Using typical defaults, the total EXCPs for these DD statements would vary from 1,400 to 3,300 for a 5,000-statement Cobol program. With the suggestions above, they would drop to 80 or 90. With the Cobol II/Panvalet suggestion, they would drop as low as 20.

EXCP counts for the various work files (SYSUT1, SYSUT2 ...) also would drop. This major reduction in electromechanical motion saves the CPU time to manage I/O, reduces contention against other tasks and reduces the elapsed time. You can't lose.

There are other options that reduce overhead, but they affect compiler output and runtime features and thus are not "quick." Modifying options that restrict programmers may be cost-effective and the right thing to do, but this task takes weeks to negotiate, and there is a diminishing return on the investment to make such assessments.

For now, however, you should just sit back and count your savings. You've done a good day's work — and it only took a few hours. •



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Goosing MVS

How does your organization boost MVS performance? We asked that question to the following IS professionals:

WAYNE PATTISON
Director
Data Center Operations
Kansas City Southern Railway Co.
Kansas City, Mo.

To enhance MVS performance, we tune the channels so they are all operating correctly, with the right loads on them. We don't do much to MVS per se.

We use IBM's RMF/Data to monitor hardware performance and SMF/Data to monitor software performance, which tells us what we're running and when we're running it. The system provides us with these facilities.

However, we're getting ready to get some additional third-party software to do that monitoring instead of letting IBM mind its own store. Theoretically, the third-party vendors don't have an ax to grind; they're putting out products to give you an unbiased view of performance so you can monitor what's going on.

JOHN MCAULEY
Manager
Computer Operations
Union Camp Corp.
Wayne, N.J.

The single biggest improvement anyone can make in his system is in the area of I/O. To enhance the performance of the overall system, I deal with the placement of data sets on paths or channels to access the data as well as dealing with the block sizes on my DASD devices. But that would happen whether I was using VM or MVS or ESA/XA; it doesn't matter.

I'm also looking at changing the performance of the system so that I favor certain work loads, such as on-line work loads, in terms of how much service they get from the system. On-line work loads get preferential treatment over batch work loads.

NATIONAL
BRIEFS

Impeccable logic

The chief executive officer of Valid Logic Systems, Inc., a San Jose, Calif.-based integrated electronic design automation software developer, pointed to IBM's reduced instruction set computing-based workstation announcement as one of the factors that knocked his company $7 million into the red for the March quarter. Soon, however, he could be crediting the same computer giant with aiding Valid back to black: Last week, IBM made an initial $11.2 million stock purchase of an equity position in Valid of 5% to 8.3%.

Out and up at Wang

Late last month, worldwide imaging director David MacWhorter unexpectedly turned up among the missing at Wang Laboratories, Inc., only to emerge as new marketing and sales vice-president at New York-based imaging systems supplier Image Business Systems Corp. Meanwhile, back at Wang, the board of directors signaled the ongoing involvement of the founding family in the struggling company, electing Courtney S. Wang to the seat formerly occupied by his father, the late Chairman An Wang.

More national briefs on page 89

Treasure lurks in junk bond ruins

As investors turn from junk, up-and-coming computer firms may reap benefits

BY ELLIS BOOKER
and NELL MARGOLIS
CW STAFF

Buried in the wreckage of Drexel Burnham Lambert, Inc. and the junk-bond empire it churned and then burned is a potential boon for growing computer companies searching for increasingly hard-to-find funding, analysts told *Computerworld*.

"The cooling off [of the junk bond market] could be positive for high-tech companies," said Jon Bayless, a general partner at venture capital firm Sevin Rosen Management Co. in New York. As the junk-bond haze clears, an investment community that in the recent past had looked askance at start-ups in general and technology start-ups in particular is viewing both with renewed interest, he said.

Stephen Gaal, a partner at Boston-based venture capital firm TA Associates, added, "All that money that's been going into junk bonds has to go somewhere."

Cash in their coffers is not the only advantage technology firms stand to reap from the collapse of Michael Milken's dream machine, said Norman Weizer, technology industry analyst at Cambridge, Mass.-based consulting firm Arthur D. Little, Inc. Another considerable benefit is likely to be a measure of freedom from the threat of being swallowed in one of the many hostile acquisitions that proliferated when junk bonds were in flower.

With the computer industry maturing, industry observers point hopefully to the rise of new companies. However, those looking for start-up money are finding it scarce.

In particular, start-ups have been damned by the performance of technology firms. Returns seen as too slow in coming and too small once they arrive have disappointed a once-enthusiastic investment community that, in the late 1970s and mid-1980s, grew accustomed to returns of 20% to 30%.

In sorry contrast, funds created after 1984 "look to be offering returns of more like 10% to 20% and maybe lower than that," said Bart Holady, managing partner at Chicago-based venture capital firm Brinson Partners, Inc.

Nor is there much in industry observers' views of the immediate future that is likely to reassure investors made skittish by the many unhappy returns of the recent past. Stock market uncertainties in the U.S. have been compounded by those abroad, and — with the notable exception of networking, widely acclaimed as the nearest

Continued on page 92

Smart money

Here's where venture money went during the fourth quarter of 1989, according to a N.Y.-based market research firm

- $87 million (more than 33.3% of the total venture money invested) went to communications companies
- The traditionally alluring software and services niche dropped to $61 million (22% of the quarter's investment activity)
- Systems companies drew a mere 15 million venture dollars
- More than three times the systems figure (approximately $48 million) went into peripherals
- Scattered amounts found their way to funding integrated circuits, semiconductor equipment and image processing

Source: Technologic Partners

CW Chart: Marie Haines Illustration: Dave Calver

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1989 Winners

Business - *Bell & Howell's Image Plus Search System©*
This system allows the rapid storage and retrieval of large amounts of documents, saving time and increasing efficiency.

Education - *Orangeburg School District 5, Orangeburg, South Carolina*
Computers have dramatically raised test scores and reduced the drop out rate in an 80% non-white, 70% free-lunch school district.

Environment, Energy and Agriculture - *Passaic River Basin Early Flood Warning System, Sierra-Misco, Inc.*
A network of microcomputers serves as an early warning system that saves lives and property.

Finance, Insurance and Real Estate - *FIX and FAST Fidelity Investments*
Fidelity Investment's FIX and FAST gives individual investors 24-hour access to account information and market data.

Government - *The Missing Children Project, University of Illinois*
Computers which accurately project updated images of missing children from old photographs have successfully reunited parents with their children.

BI Home Escort System
Helps to solve the serious problem of prison overcrowding by allowing non-violent offenders to serve sentences without being removed from society.

Manufacturing - *University of Iowa's National Advanced Driving Simulator*
By allowing specialists to create safe policies and guidelines for operating vehicles, this real-time driving simulator has the potential for saving millions of lives per year.

Media, Arts and Entertainment - *Live Aid, Uplinger Enterprises*
The Live Aid concert raised $145 million for famine victims in Ethiopia and the Sudan.

Medicine - *The Eyegaze Computer, L.C. Technologies*
A computer run completely by one's eyes, the Eyegaze computer liberates the creative minds trapped in the bodies of the severely disabled.

Transportation - *American Airlines SABRE Reservation Service*
SABRE is the world's largest real-time, non-government computer network and the world's largest travel information database.

Wholesale and Retail Sales - *The Innovis DesignCenter*
People with no computer training are creating in retail stores sophisticated three-dimensional designs.

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Intel charges AMD with infringing copyright of its math processor

BY JAMES DALY
CW STAFF

SAN FRANCISCO — Silicon Valley chip makers Intel Corp. and Advanced Micro Devices Corp. (AMD) prepared to cross swords in the courtroom again late last month when Intel filed a copyright infringement suit against AMD in federal court.

The suit charges that AMD illegally distributed Intel microcode, the software that contains the essential instructions of microprocessor chips. At the heart of the dispute is a 1976 technology-sharing agreement between the two embattled firms, which are also locked in a private arbitration proceeding over rights to Intel's 80386 microprocessor.

Intel officials claim the pact gave AMD the right to copy the microcode for Intel's 80287 math coprocessor only if it was to be used for internal applications. Legal action ensued when AMD notified Intel that it had incorporated the technology into its 80c287 chip, a coprocessor clone it plans to bring to market shortly.

Intel Vice-President F. Thomas Dunlap claimed that the AMD agreement is similar to a typical software licensing arrangement in that the microcode could be copied in the way personal computer users can make software duplicates for their own use, but the right to resell the end product requires a separate license.

But a spokesman for Sunnyvale, Calif.-based AMD called the legal action a "misunderstanding" because the original agreement was intended to be the groundwork for an industry-standard chip architecture.

The suit seeks the impoundment of any illegal copies of the code, a court order that would block AMD from marketing its new chip and unspecified damages.

Analysts said they expect Santa Clara, Calif.-based Intel to be dogged in its defense of the 80287, which is used to perform arithmetic functions in conjunction with Intel's 80286.

Not only did the 80287 bring in more than $400 million in sales for Intel last year, but coprocessors in general represent a burgeoning market. The market for the chips is expected to reach $738 million by 1993, up from its 1989 level of $562 million, according to market research firm Dataquest, Inc. Intel has also taken out a series of splashy magazine and billboard ads promoting its coprocessors.

The lawsuit by Intel can also be seen as a warning shot to the industry that it intends to be aggressive in preventing other companies from cloning its chips, according to Hambrecht & Quist, Inc. analyst Millard H. Phelps.

The action is the latest in a series of high-stakes gambits between former chip-making allies turned courtroom rivals. In recent weeks, Motorola, Inc. was found to have overstepped a similar cross-licensing arrangement with its flagship 68030 microprocessor, infringing on patents owned by Japan's Hitachi Ltd.

Intel has also engaged in legal tangles, such as a celebrated case against NEC Corp. that established the principle that microcode is assured the same copyright protection as software.

NATIONAL
BRIEFS

Up and up at Ingres

Upbeat numbers for the firm's fiscal third quarter — a profit of $212,000, in contrast with last year's $4 million third-quarter net loss, and revenue up 42% to $39.5 million — drew only modified glee from Ingres Corp. Chief Executive Officer Paul Newton, who said that the quarterly results weighed in at the low end of Ingres' range of expectations. Both expectations and returns on them could be buoyed even further by the relational database maker's late April announcement that discussions now under way may result in a minority equity investment and a broader technology partnership with Digital Equipment Corp.

Learning the ropes

Lotus Development Corp. and IBM teamed last week with the Association of Small Business Development Centers to launch an educational partnership that will help small businesses use technology. Under the partnership, 50 Small Business Development Center sites in seven states will house a learning center in which small business owners and entrepreneurs can learn how personal computers and software can help them operate their businesses more effectively.

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Quota imposed by trade group

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — In response to mounting pressure from some of its U.S. members, the Computer and Business Equipment Manufacturers Association (CBEMA) has voted to limit its foreign membership to 30%, its current level.

CBEMA's board of directors also voted to add to its mission statement the goal of improving the global competitiveness of U.S.-owned companies.

Such actions would have been unheard-of a few years ago, a knowledgeable industry source said. "In the early 1980s, CBEMA was incredibly pro-international," the source said. "Woodrow Wilson would have been real comfortable at CBEMA." However, events such as the decline of the American semiconductor industry and U.S.-foreign disputes over software copyright laws have increased protectionist pressures, according to the source.

The change in membership rules in no way affects CBEMA's existing foreign members, who will continue to enjoy the same rights as their U.S. counterparts, CBEMA President John L. Pickitt said. However, it will mean that no new foreign-owned manufacturers can be admitted unless they are offset more than two-to-one by new U.S.-owned members.

Voting not affected

Pickitt said a proposal to limit the voting rights of foreign-owned members was rejected by a majority of the board.

He acknowledged the issue had been a contentious one and that positions of CBEMA members had ranged widely. "It has been a struggle for some period of time," he said.

The changes in CBEMA's mission statement and membership rules are part of an overall restructuring of the 74-year-old association, Pickitt said. The board voted to increase its own direct participation in CBEMA affairs, moving beyond its traditional review and approval role to a more hands-on approach in which board members will draft positions and help implement programs.

The board also decided to focus CBEMA staff and funds — a bit more than $3 million annually — more sharply on a few key issues. Top priorities for 1990 are the following:

- Issues of copyright protection for software packages. CBEMA argues that computer programs — including associated algorithms, interfaces and access protocols — should be protected as literary works. Factions within the European Community and elsewhere argue for less stringent protection.
- Export controls. CBEMA wants to see U.S. government-imposed controls on exports to the Soviet Union and Eastern Europe loosened considerably.
- Government procurement policies for commercial products. Among other things, CBEMA seeks changes in laws it says discriminate against U.S. computer manufacturers and wants to encourage the purchase of off-the-shelf commercial products.
- Standards, testing and certification of computer products in Europe. Members are concerned that they may be required to submit their products for third-party testing in Europe, a move that could lead to higher prices for users and lessened design control for vendors.

INTERNATIONAL BRIEFS

As the walls fall

For the first time in 13 years, the New York-based **Association for Computing Machinery (ACM)** will be back in the USSR. The association, whose roster boasts some 80,000 software engineers and computer scientists, voted late last month to repeal the boycott of computer meetings either held in the Soviet Union or dominated by Soviet organizations, a move originally undertaken in protest of Soviet "persecution of Anatoly Scharansky and other Soviet dissident scientists," according to an ACM spokesman.

We're No. 2

Romtec's recently published 1989 PC Market Survey showed **Compaq Computer Corp.** in second place, trailing only IBM as volume personal computer supplier to the UK. To take the No. 2 spot, Compaq bypassed the No. 1 favorite son entry, UK-based **Amstrad.**

Exploring new avenues

Stuttgart, West Germany-based **Daimler-Benz Informationssysteme GmbH (Daimler-DP)** is taking its information systems act on the road. The Daimler-Benz AG division announced late last month that it is actively looking beyond its own group boundaries in scouting markets for its computing centers, network services, software offerings and consulting services.

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Teradata rides shifting winds

BY JEAN S. BOZMAN
CW STAFF

LOS ANGELES — Suddenly, Teradata Corp. is booming. The relational database maker's revenue zoomed from $47 million in 1987 to $90 million last year.

Why? Not due to an executive shuffle — management has been unchanged for the last five years. Nor has the firm altered its basic technology.

Rather, the rise of networking and proliferation of distributed data at user shops have created users newly attuned to the advantages of Teradata.

Clements is *optimistic about the firm's future*

The company reacted with a strategic shift in marketing: A machine, formerly sold as an add-on to an IBM mainframe room, is now marketed as a network-based database resource.

"Initially, the product could only talk to IBM's MVS operating system," said Ben Barnes, director of Teradata's Unisys Corp.-compatible products group. "But one of our largest customers, AT&T, wanted us to connect to Ethernet LANs and to AT&T 3B computers." Once the connection was made, he said, it became clear that it could be made again and again to a variety of platforms.

Now, Teradata can "talk" to almost any vendor's relational database management system (RDBMS), including those by Oracle Systems Corp., Sybase, Inc., Ingres Corp., Informix Software, Inc. — even IBM's DB2. However, users and analysts said, the product outruns others in the pack since it operates on a dedicated hardware platform, free from the overhead of standard operating systems.

The machine also helps collects data that has been scattered in dissimilar computer systems. "Our problem is that our corporate data is spread all over the landscape, stored under different operating systems," said Barry O'Keefe, senior technical specialist at McDonnell Douglas Corp.'s Douglas Aircraft Division in Long Beach, Calif. "We use our Teradata [system] as a way to centralize some of our files and to let everyone have at it through SQL queries."

Teradata has also gained from experimentation with alternative RDBMS products in the user community. "A number of things are coming together," Vice-President of marketing David Clements said.

American President Companies Ltd. in Oakland, Calif., has been using its Teradata system to support what information systems managers there call "analytical" processing. "Our basic requirement was to have something that could efficiently handle complex and large queries and which could be accessed from multiple platforms," said Derek Williamson, director of user support.

Repeat sales of Teradata's $7 million DBC 1012 computer account for much of the recent boom in revenue. "Five or six years ago, companies considered it a risk to do business with us because we were so small," Barnes recalled. "Now, we have a broader market to appeal to, and we're getting repeat orders from customers who were satisfied with their first machines."

Teradata is also reaping the benefits of a third computer industry trend: partnering. The firm made pacts with NCR Corp. to resell its database engine and with Charles River Data Systems in Framingham, Mass., to enhance Teradata technology. The firm is also finalizing the acquisition of $29 million Los Gatos, Calif.-based Sharebase, Inc. (see story above).

"I think Teradata will continue to grow at a rate of 50% or more for the next few years," said Marc Shulman, UBS Securities, Inc. analyst. "They could grow at an even faster rate, but management doesn't want to because they don't want to grow so fast that they can't manage that growth or finance it."

Two-part harmony

LOS GATOS, Calif. — Sharebase Corp. hit bad times in the late 1980s, as uncertain financial viability slowed orders for the dedicated database processor it had been selling into the mid-range computer market since 1982. In February 1989, the troubled firm, long known as Britton-Lee, Inc., began searching for a partner.

A year later, the search ended with an acquisition offer from Sharebase's newly prosperous competitor, Teradata Corp.

Cavalier *expects a harmonious merger*

"It's really a very harmonious type of transaction," Sharebase President John C. Cavalier said. "They've been oriented toward the IBM MVS platform, and we've been oriented toward the [Digital Equipment Corp.] world, the Unix world and the personal computer world."

The proposed merger with Teradata, now pending stockholder approval and slated to close next month, is designed to bring new cash flow to the firm. Unsure of its future, customers have held off buying new machines from the firm, which was forced to cut its 300-person work force in half and last week reported a $691,000 net loss for the quarter ending in March.

Now, there is hope that pent-up demand for new Sharebase models will boost sales. "When we had little or no working capital, people were understandably cautious about buying new Sharebase products," corporate spokesman Scott Humphrey said. "Now, the customer base will be able to see that the company is stable once again."

JEAN S. BOZMAN

Start-ups

FROM PAGE 87

thing to a a mid-'80s style hot button — safe bets are increasingly hard to target for those who wish to invest in a relatively sure thing.

Start-up firms — defined by one analyst as "three guys with a dream" — complain that their greatest challenge is locating seed capital, usually less than $250,000. However, some venture capitalists — Jim Swartz, a general partner at Accell Partners in Princeton, N.J., for one — reject the doom-and-gloom prognosis for the venture community and the young firms that need its backing.

Conceding that the number of players in the venture capital market has diminished, Swartz nevertheless said he believes in the survivors. "The ones who are still here are here for the long term," said Swartz, whose 20-year-old venture capital firm manages a $225 million fund focused on telecommunications, data communications and software start-ups. Many venture firms are focusing on "yesterday's technology," he argued. "It's the entrepreneur with the *next* computing machine who isn't finding success."

In fact, Gaal said, not just "me-too" technology but technology altogether has slipped among the priorities of investors considering tech start-ups. Whiz kids with hot gizmos, he said, are likely to be left cooling their heels in the hall while once-burned, twice-cautious venture capitalists opt to back seasoned management teams with demonstrated marketing clout.

An early tendency in this direction, according to many analysts, handed Sevin Rosen such investment triumphs as Compaq Computer Corp. and Convex Computer Corp. Now, Sevin Rosen's Bayless said, thinking about the management team first, marketing second and product last — the exact inverse of the way many start-up teams are geared to think — is going to have to become the norm for hopeful founders-to-be fighting with an increasingly diverse group of hungry hopefuls for a slice of an increasingly small venture-funding pie.

Nevertheless, Swartz said, "There is still abundant capital for good ideas and true entrepreneurs who are hard at work."

One bright spot for seed money, Holady added, has been funding from successful entrepreneurs who made their cash during the halcyon days of the personal computer industry and have returned to the market not as managers but as investors.

"There's also a growing trend of start-up teams getting advanced users interested," Weizer noted. One small document image processing firm that he is familiar with, he said, got its start when a future customer helped fund development.

Meanwhile, programs at the state and national level are trying to pick up the slack and stimulate start-ups with various venture-capital and grant programs. The state of Illinois, for example, has the Business Innnovation Fund, established by the state's Department of Commerce and Community Affairs in 1985. With its annual war chest of $3 million in matching funds, the agency has made 71 investments to date, ranging from $50,000 to a high of $500,000.

"The idea," said Grant H. Skeens, manager of technology investment funds, "is to get these companies to other forms of financing, either through a bank or by making them attractive to a venture capital company."

One recipient was Teraplex, Inc., which received $250,000 in matching funds from the program last year. The Champaign, Ill., firm, which is developing a new supercomputer architecture that it claimed will be 1,000 times faster than existing systems, also found 20 private backers, chief scientist and founder Jeff Glickman said.

Other start-ups find matching funds more burden than benefit, however, and avoid the program. "It's more like a loan than anything else," said Mike Maziarek, president and chief executive officer at Airis Computer Corp., which plans to bring out a notebook computer this month. "At 25% interest, that's an expensive investment."

Start-ups get more with their money

Wanting too much can sometimes pose a problem; so can wanting too little. Venture funds worth $50 million simply cannot dole out money in $100,000 increments; such investments would lead to unwieldy portfolios of small companies.

Sevin Rosen Management Co., for example, annually makes four or five deals in the $1 to $3 million range, although it has invested as little as $50,000 in a company, according to general partner Jon Bayless. Bayless noted, however, that there are fewer venture firms specializing in this early-stage, "seed" capital financing.

One company that has watched other venture firms move away from start-up funding is the Cerulean Fund in Glenview, Ill. The fund brings more than the seed money that start-ups need: it also offers the management skills that may be even more critical to a start-up's success.

"We have a bank of 350 people — we call them 'seed analysts,' — who have expertise in various business and technical issues," associate Anne Mastrapa explained. Paid a stipend by the fund, these mentors stay on staff and help nurture the start-up for as long as necessary.

ELLIS BOOKER

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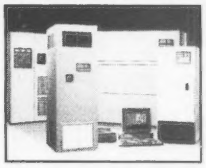

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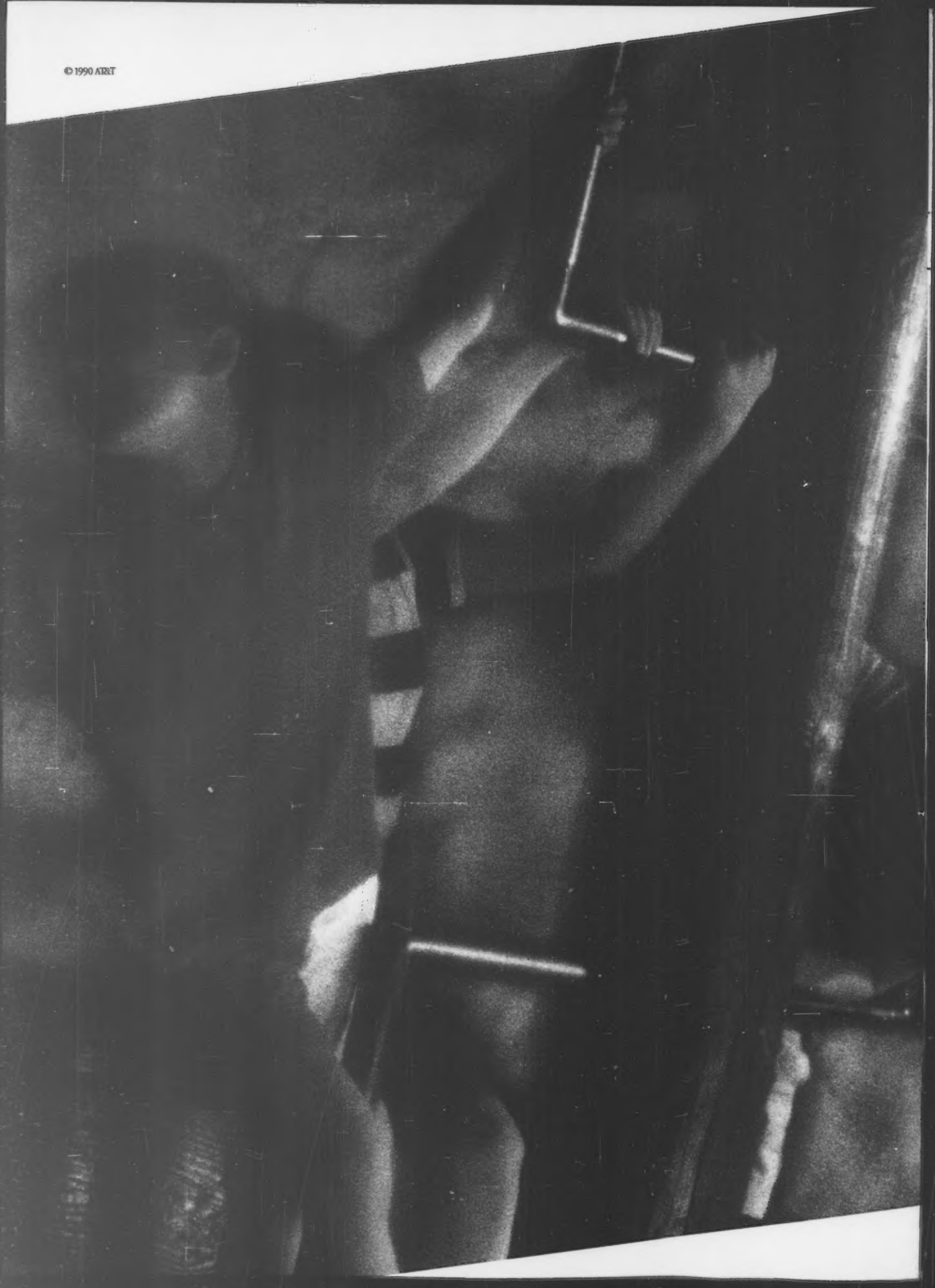

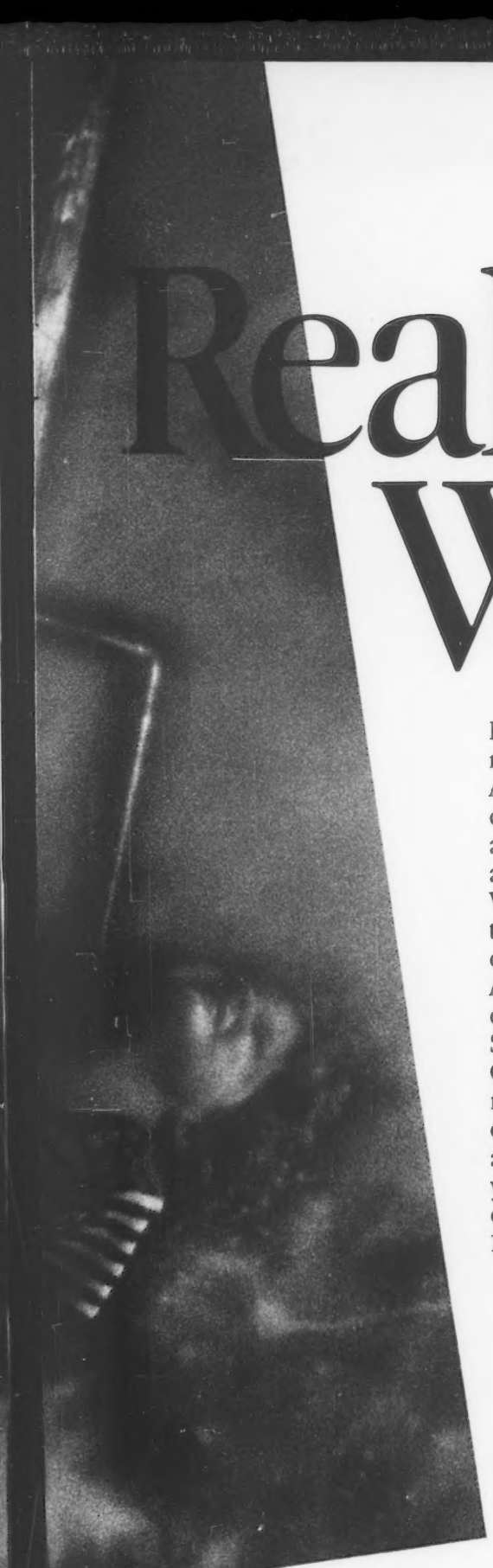

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In pursuit of foreign affairs

Do you have what it takes to help drive the globalization of your business?

BY WALTER J. POPPER
SPECIAL TO CW

Career-conscious individuals will occasionally find opportunities to radically refocus their work and move in a significantly different direction. Work in an international environment provides the perfect opportunity for anyone searching for a major career challenge.

In business, "globalization" refers to organizing work on a worldwide basis or aiming products and services at a worldwide market.

Information systems needed to support globalization include a major international telecommunications network and some global applications, primarily for internal functions such as purchasing, finance, order processing and research and development. There will also be local systems, generally for externally oriented functions such as marketing, sales and customer service.

Transnational corporations face some intriguing challenges in their use of IS. They must establish global networks when telecommunications standards, regulations and quality vary from country to country. They must negotiate corporatewide software standards when internal committee members themselves speak different languages. And they must enact the chief information officer's agenda, even though each national affiliate has its own deeply held values about information technology and its own management style and culture.

The challenges of globalization can generally be broken down into three areas, each of which represents a set of skills that an IS professional may need to acquire to become involved.

• **Overcoming regional differences.** These tasks may be straightforward, such as translating financial results from Dutch to English, or quite confusing, such as understanding that "yes" can sometimes mean "no" when it comes from a Japanese counterpart.

Some regional differences are not cultural but purely technical — there are different communications protocols, nationally-supported computer-aided software engineering tools and inconsistent data definitions. Varying regulatory and legal environments raise other issues.

• **Capitalizing on globalization in the functional areas.** Making information on research available to all units and divisions globally can offer synergy and economies of scale, to cite one example.

At the same time, the process does not force research groups to physically consolidate, so they can maintain the close ties with the product development groups they need to ensure that new products suit local tastes.

On the operations side, corporations can look to global sourcing — via global purchasing systems — to gain new suppliers and ensure optimum enterprise-wide quality and costs.

In marketing and sales, country units may want to share data on large customers that do business with more than one unit; this helps the firm present these customers with a "single face" and spot opportunities for cross-selling by various units.

• **Linking information technology to business strategy.** Some global systems efforts spring directly from specific business strategies. A corporation may want to establish inter-organizational systems, such as electronic data interchange, with its customers or suppliers abroad.

IS may also be used as the foundation of partnerships for distribution of products in another country. The IS organization may be called on to reconcile or rationalize the corporate systems after a merger or acquisition of a foreign company.

The people who support these initiatives must be able to bridge cultures and see the big picture. They must know something about the IS operations of overseas units as well as local standards, tariffs and regulations. They can bridge incompatible computer hardware and link existing applications. They can devise creative applications that satisfy both local and global needs.

Obviously, no one person can be skilled in all these areas, but the IS organization as a whole will need all this expertise.

Company size is an important factor in determining the degree of international opportunities. Major players in many industries now count on a significant portion of their revenue coming from European or Asian economies.

If you work for one of these corporations, you may be able to win job rotations or short-term assignments abroad. Such assignments are not uncommon for people who search them out.

In smaller firms, finding opportunities for international work requires more initiative. A typical first step toward an offshore job may be volunteering to attend a conference, serving on an international standards committee or visiting a potential overseas supplier.

No matter what size the firm, economists tell us there are no more purely domestic businesses. The trend in every industry is toward global markets, worldwide sourcing and international competition. Information technology is the primary enabler of that trend.

For information technology professionals, this fact suggests that there are significant opportunities for both personal challenge and career enhancement during the next few years.

IN SMALLER FIRMS, finding opportunities for international work requires more initiative. A typical first step toward an offshore job may be volunteering to attend a conference, serving on an international standards committee or visiting a potential overseas supplier.

Popper is a vice-president at Index Group, Inc., a Cambridge, Mass., management consulting firm specializing in information technology.

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Meet with company representatives at our Computing & Engineering Co-Op Career Fairs on Monday, May 14, 11AM-7:30PM, Sheraton International O'Hare, 6810 N. Mannheim Rd., Rosemont, IL. Or on Tuesday, May 15, 11AM-8PM, Chicago Hilton & Towers, 720 S. Michigan Ave., Chicago, IL.

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SENIOR ACP/TPF SYSTEMS ENGINEER required. Design and analysis of PSS (Passenger Services System) Interface Area in an ACP/TPF real-time environment. Will coordinate conversion of PSS from ACP to TPF 3.1 and will assist in the definition of problems and the communication of information during the conversion and in all enhancements thereafter. Will assure that all system functions continue to operate with intended efficiency and that all system interface connections continue to function. Applicants required to have bachelors degree in math, computers or engineering with at least 4 years of ACP/TPF programming and Basic Assembler coding experience. Education, training and experience will be found acceptable if equivalent to a bachelors degree in computers in addition to the four years experience with ACP/TPF programming and Basic Assembler coding. Annual salary will be $42,000 per year for a 40-hour work week. Additional salary up to $46,000 per year may be paid if education and experience warrant. Interested applicants apply at the Texas Employment Commission, Dallas, TX, or send resume to the Texas Employment Commission, Austin, TX 78778-0001, J.O. Number 5518178. This advertisement was paid by an equal opportunity employer.

Lead System Software Engineer. Applications Division, Office Business Unit. By June 6 send resume to: Employment Security Department ES Division, ATT: Job #196336-T, Olympia, Washington 98504. JOB DESCRIPTION: Engineer, Applications Division, Office Business Unit. Designs, implements, and tests complex and high level systems and software for mini and micro computers. Assumes lead responsibility to design electronic mail software for Apple Macintosh utilizing Macintosh, MS-DOS operating systems and utilizing "C", 68000 Assembler Series languages. Utilizes Apple Macintosh and IBM PC computers. Assumes major project responsibility including: 1) requirements and analysis of project specifications; 2) product design; and 3) implementation schedules. Two positions available. REQUIREMENTS: B.A. or B.S. in Electrical Engineering, Mathematics, Computer Science or Physics. Two years' work experience designing and implementing communication software for personal computers to allow file or message transfer, including six months' work experience utilizing Macintosh and MS-DOS operating systems, and "C", 68000 Assembler Series languages and Apple Macintosh and IBM PC computers, including utilizing Macintosh low level networking protocols and writing Macintosh device drivers. Must have proof of legal authority to work in the United States. Job located in Redmond, Washington. SALARY: $40,500-42,000 per annum, depending on experience. 40 hours per week, flex time. EOE

IMS PL/1 SYSTEMS DESIGN ENGINEER to act as systems and programmer analyst in design and development of food and beverage catering system. Conducts analysis of business systems and gathers functional requirements in order to recommend automated solutions. Models current industry events and essential services provided and analyzes future demand based on competition, data sources and projection prototypes. All phases of systems analysis to be conducted using Yourdon methodology and Jackson Structured Design. Will supervise eight or more programmer analysts. Applicants required to have a bachelors degree in math, computers or engineering and at least two years IMS PL/1 Application Programming experience. Experience must include at least one year each with Yourdon Structured Programming and Jackson Structured Analysis. Education will be found acceptable if applicant possesses a combination of education, training and experience found to be equivalent to a bachelors degree in a computer intensive curriculum. Annual salary will be $36,000 per year for a 40-hour work week. Additional salary up to $42,000 per year may be paid if education and experience warrant. Interested applicants apply at the Texas Employment Commission, Dallas, TX or send resume to the Texas Employment Commission, Austin, TX 78778-0001, J.O. number 5518175. This advertisement was paid by an equal opportunity employer.

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Applicants must obtain a job announcement and original application forms from the Pierce County Personnel Dept, 930 Tacoma Avenue South, Room 1A-127, Tacoma, WA 98402. (206) 591-7480. Resume in lieu of application is not acceptable. PIERCE COUNTY IS AN EQUAL OPPORTUNITY EMPLOYER.

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Software Localization Manager for Germany. By June 6 please send resume to: Employment Security Department, ES Division, ATT: Job #198229-T, Olympia, Washington 98504. JOB DESCRIPTION: Manages subgroup of software company to localize U.S.-designed and produced software for microcomputers for German market. Works with software engineers and international testers to implement design changes. Manages localization associates, translators, editors, typesetters, printers, and marketing personnel to produce German manuals and marketing material to accompany PC Word software. Communicates with company subsidiaries in Germany re software and marketing needs. REQUIREMENTS: B.A. in Business Administration with major in Marketing or Economics. Must be able to fluently speak, write and read German and English, including current colloquialisms, idioms and jargon of German, especially as it pertains to business usage. Six months work experience in localization of business automation software for German market. Must have proof of legal authority to work in the United States. Job location: Redmond, Washington. SALARY: $33,500-36,000 per annum, depending on experience. 40 hours per week, flex time. EOE

SENIOR IMS DB2 SYSTEMS DESIGN ENGINEER required. IMS PL/1 and IMS DB2 Systems Design of Flight Planning System. Conducts analysis of market and gathers functional requirements in order to recommend automated solutions to planning, communications, etc. Models current industry events and essential services provided and analyzes future demand based on competition, data sources, and projection prototypes. All phases of systems analysis to be conducted using Yourdon methodology and Jackson Structured Design as well as TELON. Applicants required to have a bachelors degree in math, computers or engineering and at least four years IMS PL/1 and IMS DB2 Programming experience. The four years experience must include at least one year each TELON and Yourdon Structured Analysis. Annual salary will be $50,000 per year for a 40-hour work week. Additional salary up to $54,000 per year may be paid if education and experience warrant. Interested applicants apply at the Texas Employment Commission, Austin, TX 78778-0001, J.O. number 5518179. This advertisement was paid by an equal opportunity employer.

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If you are seriously interested, mail or fax your resumé to Irene Harding, Galileo Centre Europe, Windmill Hill, SWINDON SN5 9NX, UK.

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Candidates must be competent in the entire range of MIS activities and demonstrate the ability to communicate effectively with users and all levels of management. Due to the wide range and depth of activity involved, candidates must have demonstrated high academic achievement in the upper 25% of graduating class. A BS/MS/MBA degree from an accredited university with a concentration in MIS is required.

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MARKETPLACE

How to make the right decision

Software can help, but first you need to make some choices in selecting it

BY JESSICA KEYES
SPECIAL TO CW

Decisions, decisions. They're so hard to make. James F. Byrnes, an advisor to President Franklin D. Roosevelt, described one man's battle with the decision demon. A farmer hired the man to dig postholes and he polished off the work handily, then cleared stumps in record time. The next day, the farmer rewarded the man with an easy job — sorting good and bad potatoes. However, after about three hours, the man fainted. Revived, he exclaimed, "Those damn decisions just mowed me down!"

Harder still are decisions that arise from a series of preceding decisions. Should I purchase $5,000 of stock XYZ? The answer will usually hinge on a myriad of other questions: How much money do I make in a year? How much have I saved? How risky is this stock?

An information systems help desk might develop a system that helps a personal computer user decide what to do when facing a blank screen. It would ask: Is the machine plugged in? If it is, has there been a power surge? If not, have you been having trouble with the VGA card?

Each of these questions are wrapped around questions inside them. What we need is something to present us with the options and keep track of the results — a picture of the whole shebang. Well, there's hope for us; it's called decision-tree software.

Decision trees might be included in decision support systems or used alone. In their pure form, they use "if-then" rules to chart a course across intermediary decisions to reach a conclusion. Like a real tree, each decision tree has a root, intermediate nodes and extending branches. Each node represents a decision that must be made. Progress continues until a solution is reached. However, don't let this seeming simplicity fool you. Decision trees can be very complex.

Decision-tree vendors target a wide range of customers. Most aim their systems at technicians, analysts, engineers and application programmers with varying degrees of experience. Extremely complicated systems might support, say, the launch of a space satellite. Some low-end products make the creation of decision trees easy enough for nontechnical PC users.

In general, there is a lot of latitude within the definition of decision-tree systems. They range in price from $199 for some of the PC products to more than $20,000 for minicomputer versions. Individual packages encompass enough variation to make a checklist of questions helpful when shopping for one. In selecting a product, you should consider the following questions:

How are the decision rules entered into the system? There are two choices. Most systems permit the developer to enter rules textually in the format "if . . . then." There is another approach to knowledge gathering, however, and some vendors prefer it. In the so-called induction method, one enters a series of examples. The system will then induce rules from the examples.

Are rules entered graphically or textually? Somehow it's much easier to develop a system composed of complex decisions when you can see the work graphically on the screen (and in full color). For these graphical systems, your next question should be whether there is a cut-and-paste facility for moving branches around.

Is this graphical representation available to the user? What's good for the developer is usually good for the user. For example, in a credit application, a loan officer uses a decision-tree system to grant or deny credit. Say that client X was denied credit. Pressing a function key, our loan officer sees a tree displayed on the screen, with the path this loan application took displayed in red. Our loan officer quickly sees why the application was denied.

Is there a limit to the tree's processing capacity? There may be a maximum number of rules or examples that the tree can handle — 500, perhaps, or 1,000. Some systems are limited only by computer memory.

How does the user interact with the system? Some of the more forward-looking decision-tree systems give users an interface that they can identify with — forms. Credit applications, mortgage applications, insurance underwritings, and the list goes on.

Does the system permit access to the right databases or a program written in another language? Not all decision-tree systems are created equal. Nowhere is this more true than in the ability to grab external data or perform external routines. Find out with which databases the system interfaces.

Does the system have the ability to perform complex mathematical functions? A good decision-tree system should permit you to do more than just arrive at an answer of "yes" or "no." It should be robust enough to do heavy-duty calculations. Some systems only perform if-then logic without permitting calculations.

Is the system portable? We are in an age of rapid technological change; one trend seems to be PC-DOS today, Unix tomorrow. Ask the vendor where its system runs today and where it will run tomorrow.

Now, before tomorrow arrives, arm yourself with your checklist and go out and make a good decision!

Keyes is president of New Art, Inc., a management and computer consulting firm in New York.

Index

Marketplace 104
Buy/Sell/Lease 104
Peripherals/Supplies 106
Software 106
Graphics/Desktop Pub 106
Data Conversion 107
Time/Services 107
Bids Proposals/Real Estate .. 108
Training 109

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XT Model 089	$775	$900	$750
AT Model 099	$1,150	$1,375	$745
AT Model 239	$1,200	$1,700	$1,200
AT Model 339	$1,370	$1,400	$1,000
PS/2 Model 50	$2,060	$2,200	$2,000
PS/2 Model 60	$2,425	$2,600	$2,400
Compaq Portable II	$1,475	$1,725	$1,400
Portable III	$2,300	$2,500	$1,900
Portable 286	$1,700	$2,000	$1,700
Plus	$750	$950	$675
Deskpro	$825	$900	$800
Deskpro 286	$1,400	$1,625	$1,300
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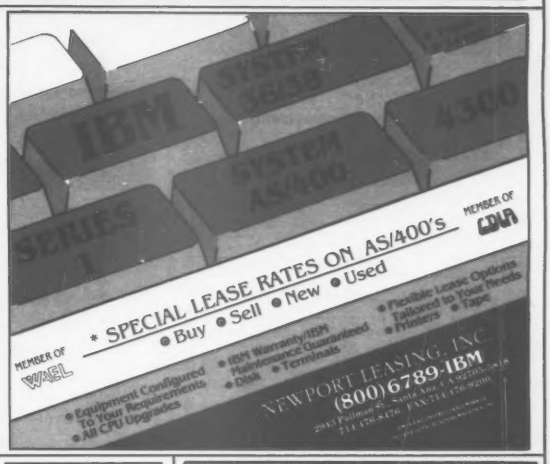

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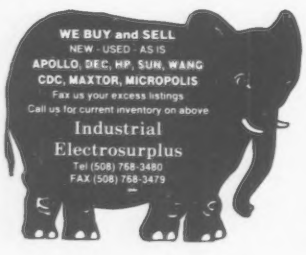

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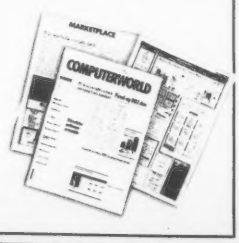

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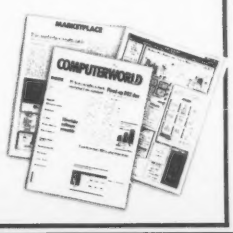

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The dangers of downsizing

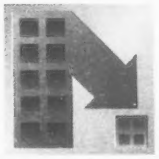
Companies cutting back on IS staff need more training, not less

BY WILLIAM SEBRELL
SPECIAL TO CW

A few years ago, being an information systems professional in many organizations endowed an individual with practically guaranteed employment, a healthy salary and considerable training in new technology. The technology wasn't even always to be used in the near future: One of the technical training manager's hidden objectives was to use training to lure and retain IS staff members.

These IS people didn't have to worry about career planning. They could specialize in narrow technical fields in which they were interested. They sometimes won promotions as rewards even though they had no real management responsibility. There was no motivation for them to become expert in anything other than their specialty. Technology was an end in itself.

This situation has radically changed in the last few years. Today, companies are incorporating the use of technology into strategic plans but are also attacking the notion that they need large numbers of specialized technologists to support their strategy. End users are rapidly learning to do a considerable amount of work for themselves — sometimes faster, better and cheaper than it was done in the past. For the first time, we see widespread layoffs and flat budgets in IS organizations as companies downsize.



In this environment, highly specialized and inflexible senior IS people are of little or no value to corporations unless they chose one of the specialties in demand today. Along with some overly technical managers, they are frequently prime targets in the downsizing process.

How do these developments affect IS training? Almost universally, firms sweep the technical training budget into the downsizing process and cut it as a proportion of total IS spending.

From both a strategic and tactical standpoint, this is a major corporate blunder. The downsizing or downsized organization needs to do more training than in the past, not less. Such organizations also need to do different kinds of training.

There are many reasons for these needs. For one, today's IS people all need to plan careers, and some of them badly need training in how to go about it. Often, they fear that the firm that was going to protect them is no longer reliable, which prompts them to leave. The first ones to go are the ones the company least wants to lose — the people who are the most experienced and therefore the most marketable. Since they are valuable assets, it is in the corporation's best interests to help them chart a continued career with the company.

If these people do leave, the only way the company is going to replace them is through an extensive and expensive internal training effort. With company downsizing, it may be politically difficult to replace the individuals with outsiders; it may be hard to find replacements anyway.

Another frequent result of downsizing is the removal of at least one layer of technical management, leading to a flattening of the IS organization. The problem is that the work done by the people in the eliminated positions has not gone away; it now needs to be picked up by individuals at a lower level.

What are the chances that these lower-level people will do the work well? In many cases, they will have no training for it; sometimes they will lack even a good understanding of the issues and problems involved. It seems silly not to address this issue with a training plan.

Another by-product of downsizing is an overwhelming desire to "upgrade" the IS staff. This statement has several implications. The most obvious one is the firm's desire to introduce application development technologies to increase the speed with which projects are delivered, enhance customer satisfaction and reduce future maintenance costs.

A more subtle implication of the interest in "upgrading" is that technologists need to know considerably more about business in general and their company's business in particular. In addition, they must enhance their interpersonal skills, an area in which they traditionally have had no formal training and may have little practical experience. The company probably will have to provide training in this area too.

Lastly, downsizing raises the issue of maintaining the level of customer service — not just with external customers but with internal users too. Unfortunately, it is only recently that IS professionals have begun to think about service as an important part of their jobs.

For this reason, too, some of them will need to begin developing more advanced interpersonal skills. In this case, the need will call for particularly specialized training.

The only reasonable response to all of these pressures is to develop sophisticated training plans and quickly implement coordinated programs. The companies that recognize these needs and plan, organize and budget for them — rather than cut back on IS training — will hold an edge in the marketplace.

Sebrell is a vice-president at Data Base Management, Inc., a subsidiary of American Management Systems, Inc. in Manchester, Conn.

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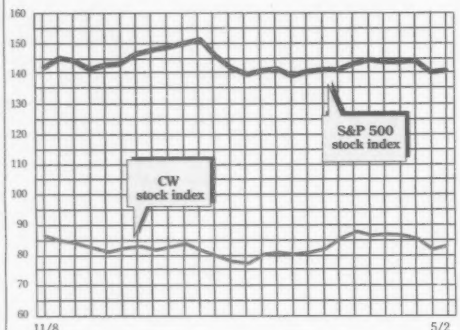
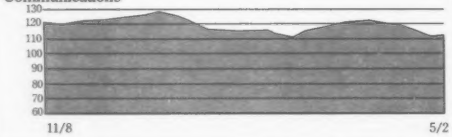
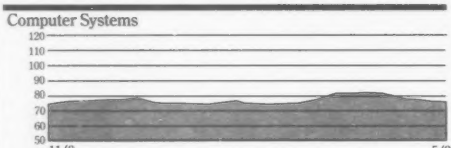


Indexes	Last Week	This Week
Communications	112.0	112.3
Computer Systems	78.3	77.9
Software & DP Services	116.6	117.5
Semiconductors	54.2	55.9
Peripherals & Subsystems	81.9	81.0
Leasing Companies	87.7	89.2
Composite Index	82.9	83.5
S&P 500 Index	140.0	141.0

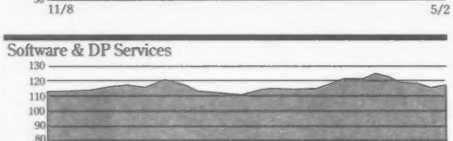
Communications



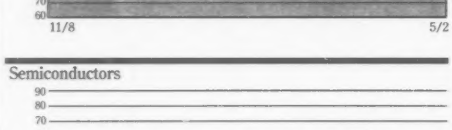
Computer Systems



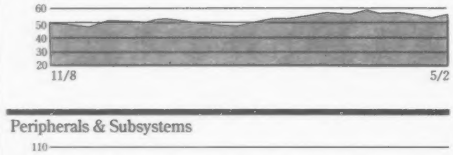
Software & DP Services



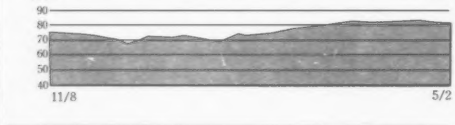
Semiconductors



Peripherals & Subsystems



Leasing Companies



CW CHARTS

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, MAY 2, 1990

EXCH		52-WEEK RANGE		PRICE CLOSE MAY 2, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
Communications and Network Services						
N	AMERICAN INFO TECHS CORP	68	55	60	0.4	0.6
Q	ANDREW CORP	26	20	22.5	0.0	0.0
Q	ARTEL COMM CORP	10	4	5.75	0.3	4.5
N	AT&T	47	34	40.125	0.0	0.0
Q	AVANTEK INC	7	2	3.125	0.3	8.7
N	AYDIN CORP	21	14	15	0.3	-1.6
N	BELL ATLANTIC CORP	57	40	47.375	-46.5	-49.5
N	BELLSOUTH CORP	59	45	53.875	0.8	1.4
Q	COMPRESSION LABS INC	15	6	12.375	1.1	10.0
Q	CONTEL CORP	37	23	28	1.0	4.0
Q	DATA SWITCH CORP	5	2	2.25	0.1	2.8
Q	DIGITAL COMM ASSOC	25	17	20.125	-0.1	-0.6
Q	DYNATECH CORP	21	15	15	-0.5	-3.2
Q	FIBRONICS INTNL INC	8	4	7	0.4	5.7
Q	GANDALF TECHNOLOGIES	7	2	2.5	-0.1	-4.8
N	GENERAL DATACOMM INDS	7	3	3.5	0.0	0.0
N	GTE CORP	72	48	60.875	-1.1	-1.8
Q	INFOTRON SYS CORP	13	4	3.75	-1.8	-31.8
N	ITT CORP	65	51	52	0.0	0.0
N	M A COM INC	9	3	3.625	0.3	7.4
Q	MCI COMMUNICATIONS CORP	49	31	36	1.3	3.6
N	NETWORK EQUIP TECH INC	34	9	11.375	2.1	23.0
Q	NETWORK SYS CORP	13	7	12	1.3	11.6
N	NORTHERN TELECOM LTD	26	17	23.875	0.4	1.6
Q	NOVELL INC	45	24	38	1.5	4.1
N	NYNEX CORP	92	72	81	0.1	0.2
N	PACIFIC TELESIS GROUP	52	38	42.75	0.0	0.0
A	PENRIL CORP	9	4	7.375	0.3	3.5
N	SCIENTIFIC ATLANTA INC	25	15	23.25	1.1	5.1
N	SOUTHWESTERN BELL CORP	65	48	54.25	-0.4	-0.7
Q	3 COM CORP	29	10	12.125	0.4	3.2
N	U S WEST INC	81	64	71.625	1.5	2.1
Computer Systems						
Q	ALLIANT COMPUTER SYS	8	4	6.875	0.3	3.8
Q	ALPHA MICROSYSTEMS	8	3	3.375	-0.1	-3.6
Q	ALTOS COMPUTER SYS	8	5	6.25	0.6	11.1
A	AMDAHL CORP	23	11	13.375	-0.8	-5.3
Q	APPLE COMPUTER INC	50	32	39.75	1.0	2.6
Q	AST RESH INC	24	7	21.5	0.5	2.4
N	BOLT BERANEK & NEWMAN	9	4	4.125	-0.5	-10.8
N	COMPAQ COMPUTER CORP	113	73	99.5	5.5	5.9
N	COMMODORE INTNL	19	6	6.5	-0.5	-7.1
N	CONTROL DATA CORP	23	16	18.375	-0.3	-1.3
N	CRAY RESH INC	57	31	42.25	-1.0	-2.3
N	DAISY SYS CORP	5	0	0.5	0.0	0.0
N	DATA GEN CORP	19	8	8.75	-0.3	-2.8
N	DATAPOINT CORP	6	2	2.875	0.1	4.5
Q	DELL COMPUTER CORP	9	5	8.5	-0.1	-1.4
N	DIGITAL EQUIP CORP	103	70	83.75	-0.3	-0.3
N	FLOATING POINT SYS INC	4	0	1	0.2	23.0
N	HARRIS CORP	40	28	30.125	-0.9	-2.8
N	HEWLETT PACKARD CO	58	40	44.375	0.9	2.0
N	HONEYWELL INC	92	73	88.375	0.1	0.1
N	IBM	119	93	109.125	-0.3	-0.2
Q	INFORMATION INTL INC	16	12	11.5	-0.3	-2.1
Q	IPL SYS INC	14	5	8.75	-4.8	-35.2
N	MAI BASIC FOUR INC	8	2	2.5	-0.4	-13.0
N	MATSUSHITA ELEC INDL LTD	184	123	138.25	2.8	2.0
Q	MENTOR GRAPHICS CORP	23	14	22.5	2.5	12.5
N	NBI INC	3	0	0.281	0.0	0.0
N	NCR CORP	72	53	66.125	1.1	1.7
Q	PYRAMID TECHNOLOGY	32	9	31.25	1.5	5.0
Q	SEQUENT COMP SYS INC	28	11	26.5	2.3	9.3
Q	SHAREBASE CORP	3	0	0.438	0.0	0.0
Q	SUN MICROSYSTEM INC	25	13	24.5	1.9	8.3
Q	SYMBOLICS INC	2	0	0.5	-0.1	-20.0
N	TANDEM COMPUTERS INC	30	16	25.625	0.9	3.5
N	TANDY CORP	49	30	31.875	0.8	2.4
N	ULTIMATE CORP	12	5	5.25	-0.5	-8.7
Q	UNISYS CORP	28	12	14.875	0.6	4.4
A	WANG LABS INC	9	4	4.625	-0.3	-5.1
Software & DP Services						
Q	AMERICAN MGMT SYS INC	16	11	13.5	-0.1	-0.9
Q	AMERICAN SOFTWARE INC	24	14	18.75	-0.9	-4.5
N	ANACOMP INC	8	3	3	0.3	9.1
Q	ANALYSTS INTL CORP	20	13	18.25	0.4	2.1
Q	ASHTON TATE	24	9	11.125	0.0	0.0
Q	ASK COMPUTER SYS INC	16	7	8	0.3	3.2
N	AUTO DATA PROCESSING	55	38	51.75	1.0	2.0
Q	AUTODESK INC	50	33	44.75	0.5	1.1
Q	BMC SOFTWARE INC	26	12	21	-1.8	-7.7
N	BUSINESSLAND INC	14	7	8.75	-0.5	-5.4
Q	COGNOS INC	8	4	6.5	0.3	4.0
N	COMPUTER ASSOC INTL INC	22	11	13.375	0.1	0.9
Q	COMPUTER HORIZONS CORP	14	7	13	0.8	6.1
N	COMPUTER SCIENCES CORP	59	40	45.5	1.4	3.1
N	COMPUTER TASK GROUP INC	15	9	10.875	0.1	1.2
Q	COMSHARE INC	44	28	41.5	1.0	2.5
Q	CORPORATE SOFTWARE	16	8	12	-0.5	-4.0
N	GENERAL MTRS (CLS E)	32	24	30.625	0.4	1.2
Q	HOGAN SYS INC	7	4	4	0.1	3.2
Q	INFORMIX CORP	17	8	12.375	-0.1	-1.0
Q	INTELLICORP INC	7	3	5.75	0.0	0.0
Q	LEGENT CORP	32	19	23.5	3.0	14.6
Q	LOTUS DEV CORP	38	21	32.5	1.5	4.8
Q	MICROSOFT CORP	63	26	58.25	0.3	0.4
Q	NATIONAL DATA CORP	35	23	23.75	-0.5	-2.1
N	ON LINE SOFTWARE INTL INC	11	6	7.75	-0.1	-1.6
Q	ORACLE SYS CORP	28	13	15.875	0.0	0.0
N	PANSOPHIC SYS INC	19	10	11.125	0.1	1.1
Q	PHOENIX TECHNOLOGIES INC	17	2	3	0.0	0.0
Q	POLICY MGMT SYS CORP	38	28	34.25	2.5	7.9
Q	PROGRAMMING & SYS INC	23	16	21	0.5	2.4
N	RELATIONAL TECH INC	11	5	7.75	-1.6	-17.3
N	REYNOLDS & REYNOLDS CO	34	19	20.625	-0.5	-2.4
Q	SAGE SOFTWARE INC	13	7	12.75	0.9	7.4
Q	SEI CORP	20	15	19.75	0.6	3.3
Q	SHARED MED SYS CORP	19	12	12.5	-0.5	-3.8
Q	SOFTWARE PUBG CORP	25	13	22.25	2.3	11.3
Q	SUNGARD DATA SYS INC	26	13	19.75	0.3	1.3
Q	SYSTEMATICS INC	44	30	40.875	-0.4	-0.9
N	SYSM CENTER INC	26	17	18.875	0.4	2.0
N	SYS. SOFT INC	29	13	22	-3.0	-12.0
Q	WORDSTAR	3	1	1.125	-0.1	-5.3
Semiconductors						
N	ADV MICRO DEVICES INC	11	7	8.625	0.3	3.0
N	ANALOG DEVICES INC	12	7	6.875	-0.3	-3.5
Q	ANALOGIC CORP	11	9	9.75	0.1	1.3
Q	CHIPS & TECHNOLOGIES INC	26	15	18	2.0	12.5
Q	INTEL CORP	44	28	40.25	0.5	1.3
Q	MICRON TECHNOLOGY INC	26	7	13.125	1.8	15.4
N	MOTOROLA INC	72	45	71.5	4.0	5.9
N	NATL SEMICONDUCTOR	9	5	7.125	0.1	1.8
N	TEXAS INSTRS INC	47	28	34.5	0.0	0.0
A	WESTERN DIGITAL CORP	13	6	11.625	-0.4	-3.1
Peripherals						
Q	ALLOY COMP	3	1	1.063	0.1	13.3
N	AM INTL INC	6	2	2.25	-0.4	-14.3
Q	AUTO TROL TECH CORP	6	2	2.75	-0.3	-8.3
Q	BANCTEC INC	20	11	17.5	0.1	0.7
A	COGNITRONICS CORP	8	3	4.125	-0.4	-8.3
Q	CONNER PERIPHERALS	21	10	19.625	0.9	4.7
A	DATAPRODUCTS CORP	17	5	9.75	0.0	0.0
A	DATARAM CORP	15	8	14.5	0.0	0.0
N	EASTMAN KODAK CO	52	36	37.875	0.1	0.3
N	E M C CORP MASS	7	3	5.125	-0.1	-2.4
Q	EMULEX CORP	12	4	5.125	0.1	2.5
Q	EVANS & SUTHERLAND	33	17	31.5	3.0	10.5
Q	ICOT CORP	3	1	1.375	0.0	0.0
Q	INTERLEAF INC	9	5	5.625	0.1	2.3
Q	IOMEGA CORP	6	2	3.875	-0.3	-6.1
Q	LEE DATA CORP	4	1	1.5	-0.1	-4.0
Q	MASSTOR SYS CORP	4	1	1.25	-0.3	-16.7
Q	MAXTOR CORP	14	7	13.125	0.5	4.0
Q	MICROPOLIS CORP	7	3	4.875	-0.3	-4.9
N	MINNESOTA MNG & MFG CO	85	68	79	-0.8	-0.9
Q	PERSONAL COMP PRODUCTS INC	5	4	4.25	0.1	3.0
Q	PRINTRONIX INC	12	7	11.625	-0.4	-3.1
N	QMS INC	15	7	15	0.6	4.3
Q	QUANTUM CORP	17	6	15.75	1.3	8.6
N	RECOGNITION EQUIP INC	13	5	5.188	0.1	1.2
Q	REXON INC	9	6	8.625	-0.1	-1.4
Q	SEAGATE TECHNOLOGY	20	10	12.375	1.4	12.5
N	STORAGE TECH CORP	26	9	26	1.4	5.6
Q	TANDON CORP	2	0	2.125	-0.1	-2.9
N	TEKTRONIX INC	24	13	13.125	-0.3	-1.9
Q	TELEVIDEO SYS INC	1	0	0.188	0.0	-14.2
N	XEROX CORP	69	46	46.75	-5.5	-10.5
Leasing Companies						
Q	AMPLICON INC	17	8	8.75	0.0	0.0
N	CAPITAL ASSOC INTNL INC	8	3	3.5	-0.1	-3.4
N	COMDISCO INC	34	17	18	0.0	0.0
Q	CONTINENTAL INFO SYS	1	0	0.281	0.0	12.4
Q	LDI CORPORATION	18	13	15	0.1	0.8
Q	PHOENIX AMERN INC	5	3	3.375	0.0	0.0
Q	SELECTERM INC	9	6	5.625	0.0	0.0

EXCH: N = NEW YORK; A = AMERICAN; Q = NATIONAL

Stretch run

Technology firms gain ground after week of racing numbers

Technology stocks raced around Wall Street last week, with most issues trading up at Thursday's finish line.

Among the leaders was Motorola, Inc., which zoomed to a new midweek high, ending at 70⅝ Thursday, up 4⅜. Other chip makers weren't left in the dust, however. Intel Corp. picked up 1⅝ points to close at 41, and Chips and Technologies, Inc. added 2⅛ to finish at 18¾. Advanced Micro Devices, Inc. coasted in unchanged at 8⅝ on news that it had settled its two-year patent litigation with Samsung Semiconductor, Inc.

The moving and shaking of chief executive officers seemed to set some stocks in motion. After Chairman and Chief Executive Officer Edward Esber resigned, Ashton-Tate Corp. fell ½ of a point to 10⅜. Oracle Systems Corp. was up 1¾ to 17¼ as its chief predicted good fourth-quarter revenue. Prophesies of increased profits from IBM's top dog helped lift its stock 1⅞ to 109¼.

Shares of both Digital Equipment Corp. and Apple Computer, Inc. climbed as the firms finally introduced linked products. DEC collected 4¼ points to end at 86¼; Apple added ⅞ of a point to close at 40. Lotus Development Corp. advanced 3 points to 33, while partner Novell, Inc. rose 3⅛ to 38½.

KIM S. NASH

Expert system joins fraud squad

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The notion that expert systems can be blended with traditional information systems was heartily endorsed at a conference last week by Manufacturers Hanover Trust Co., which unveiled a system called Inspector that monitors foreign-exchange deals to detect fraud.

Inspector is a "technology melting pot," officials said, that combines an expert system, an Oracle Systems Corp. database, various mainframes and an international network. "We believe in mixing the old with the new . . . and drawing on each technology's strengths," said Elizabeth Byrnes, vice-president of the strategic technology applied research group at the New York-based investment bank.

Byrnes described the development of Inspector, which was fully deployed last September at the Second Annual Conference on Innovative Applications of Artificial Intelligence. Other AI implementations described included the following:

- Reuters Ltd. and Carnegie Group, Inc. jointly developed an expert system that provides content-based indexing of the Reuters database of news stories. It is expected to cut labor costs by $752,000 in fiscal 1990 and $1.3 million in fiscal 1991.
- The SWIFT international banking network is using an expert system to monitor, diagnose and fix problems in network operations, according to the Society for Worldwide Interbank Financial Telecommunications, based near Brussels.
- The Internal Revenue Service has captured the expertise of an actuary in a laptop computer system for use in field audits of pension funds. It is expected to generate at least $100 million in previously uncollectible revenue.

At Manufacturers Hanover Trust, the Inspector system was designed at the request of senior management to spot high-risk or fraudulent currency deals. A single unauthorized or fraudulent trade — deals typically range from $8 million to $13 million — could damage the bank's profitability.

However, looking for a bad deal among the thousands executed each day is as tedious as looking for the proverbial needle in a haystack, said Thomas Campfield, vice-president for investment banking. He said it requires "the memory of a history professor, the perseverance of an auditor and the insight of a sleuth."

Using an expert system shell, Nexpert Object by Neuron Data in Palo Alto, Calif., the bank was able to consolidate the expertise of senior traders and auditors into 75 generic rules and apply them to every recorded deal made daily. The trickiest part of writing the rules was dreaming up the clever ways that a trader could try to circumvent the bank's regular controls, Campfield said.

Byrne said the system allows all of the transactions recorded by the bank's 23 worldwide offices to be analyzed by the Inspector system in four hours overnight, so that a paper report of suspicious activity is on the desks of senior managers each morning for follow-up investigations.

High stakes

Manufacturers Hanover's Inspector system is aimed at spotting trading schemes that have often developed into multimillion-dollar scandals at major banks

Foreign-exchange frauds:

Dai-Ichi Kangyo Bank Ltd., Japan, September 1982	A foreign exchange dealer at its Singapore branch lost about $40 million from unauthorized speculation against the dollar
Fuji Bank Ltd., Japan, November 1984	The chief foreign exchange dealer at its New York branch lost $47.9 million when he bet that the dollar would crash against the yen. He kept his losses secret for three months, helped by the fact that the branch computer system was being replaced at the time
Volkswagen AG, West Germany, March 1987	Discovered a giant in-house foreign exchange fraud that may have cost as much as $253 million

CW Chart: Doreen Dahle

Western

FROM PAGE 1

million for 1989, down $97 million from the previous year, following a decline of more than $200 million in annual Telex revenue over the past two years. The Financial Services unit, which provides money transfer, Mailgrams, telegrams and cablegrams, had revenue of $309.1 million, up from the previous year's $282.2 million. Still, the company reported a loss of $32.3 million for 1989, following a $1.08 billion loss in 1988.

Graham also claimed the company has not lost any customers because of its financial problems. "When you explain to them what is going on, it is no big deal," he said.

Al Casazza, a credit analyst at Moody's Investors Service, said customers of Western Union's Financial Services are probably not very concerned about the company's financial health. However, he said, corporate customers of Business Services may be worried about continuing service if the company is failing, and that could affect new sales.

One E-mail industry expert, who asked not to be named, said that no matter what the eventual fate of Western Union is, its widely installed E-mail product, Easylink, "is not going to be turned off. Whether Easylink is owned by Western Union or Purina Dog Chow does not matter in some senses," the expert said.

Better service levels

Steven York, manager of information exchange technology at Hughes Aircraft Corp. in Los Angeles, said Western Union's financial troubles have not affected service levels for Western Union products in use at Hughes, such as Easylink. In fact, he said, service levels have improved during the past year.

York said that he is not seriously concerned that service to the Western Union products could be interrupted if the company is forced into Chapter 11 next month. If that were the case, he said, "I think their customer base will get purchased. I don't anticipate any interruption of service. If it did, we have alternate sources available."

Western Union is trying to move quickly to save what remains of the company. It has sold off the parts of the company that do not relate directly to its messaging and money-transfer businesses, it will have trimmed its work force from 7,600 in January 1988 to less than 3,500 by the year's end, and it has brought in new marketing blood — including Graham — from companies such as IBM. Also, if the debt can be restructured, there is a good chance Western Union could survive into the 21st century. The debt stems from junk bonds issued by Drexel Burnham Lambert during the 1987 takeover of Western Union by financier Bennett LeBow.

"It doesn't matter how good their businesses are if they can't get out from under this debt," Johnson said. "There won't be a Western Union if they don't get past June."

In an effort to stave off disaster, the company has reportedly met with the holders of the bonds and presumably asked them to work out a deal whereby the loans — which currently have a 19.25% interest rate — can be exchanged for new securities bearing lower interest rates and longer maturity periods. The issue must be resolved by June 15, the due date for the interest payment.

There is a high possibility that the noteholders will agree to such an arrangement, analysts said. If Western Union declares bankruptcy, they said, the noteholders might get nothing.

"[Western Union] sold off most of their assets, and I don't really see a lot left that they really want to sell or could sell," Johnson said. "If they go under, no one is going to win."

Casazza said if the company can restructure the debt, "then the company's management can go back and concentrate on getting these two profitable and growing businesses — money transfer and E-mail, which have been earning money — to offset the troubles with the decline in the old Telex business."

Telex, a longtime Western Union business mainstay, has had its market eroded rapidly by the influx of facsimile machines domestically and abroad. However, Business Services still has growth potential, analysts said.

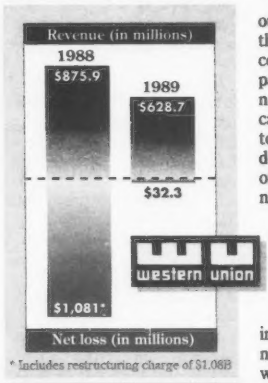
If there is hope for Western Union, it will not be over the short term. Western Union stock prices have plummeted from more than $30 per share a few years back to approximately 50¢ per share in recent weeks.

"If I were a creditor, I wouldn't be the least bit interested in an equity stake unless I were an extremely long-term holder," Johnson said. "There are no earnings, there is no book value, there is no cash flow.

Johnson added, "I think there is probably light at the end of the tunnel, but it is a long, long tunnel."

Wasting away

Despite attempts to develop new markets, Western Union's laggard finances continue to cloud its future



* Includes restructuring charge of $1.08B

CW Chart: Marie Haines

The medium's not the message

Like the case of the fire station burning to the ground, the company that has been providing people with messaging capabilities of all sorts for more than 100 years has been lax in relaying its own message: "We are more than telegrams."

It is unlikely many people would equate the company with E-mail EDI and computer-generated fax.

So why hasn't Western Union been able to get its message out? "We were a monopoly for many years," said Steven Graham, vice-president of marketing for the business services group. "We didn't have to be street smart, and we weren't out there marketing or working with the customers."

Some of Western Union's product offerings are genuinely unique. Take its EDI product, which includes the Freeform Conversion Service, allowing the delivery of EDI transmissions in the form of EDI to personal computers or larger systems. But it also allows people and firms that are not EDI-capable to receive EDI over fax, Telex or next-day Mailgram.

Other messaging product offerings include the following:

- Officeaccess, which enables users to send documents directly from the office system workstations they are created on.
- Easylink, a public E-mail service that enables PC and terminal users to send text messages and data both in-house and over phone lines.
- Western Union 400, which uses the international X.400 standard for connecting dissimilar E-mail systems.

ALAN J. RYAN

NEWS SHORTS

Sharebase adjusts numbers

Financially troubled Sharebase Corp. last week announced a correction to its previously released first-quarter financial results. The company reported that revenue totaled $4,381,000 rather than $4,631,000 and that its net loss was $868,000 rather than $691,000. Sharebase President and Chief Executive Officer John C. Cavalier said the amendment relates to "one transaction, which was subsequently determined to be contingent upon certain conditions." Sharebase, a database vendor, has agreed to be acquired by competitor Teradata Corp.

Minitel tests videotex for deaf

New York-based Minitel USA, Inc. announced last week a field trial of its videotex system with deaf students at Gallaudet College in Washington, D.C. The trial is designed to test the suitability of videotex as a communications tool for the hearing-impaired community. Minitel's bulletin boards, electronic-mail and information services are widely used by the deaf in France.

Microsoft Dial-a-DOS

Microsoft Corp. will use a newly established 900 number providing MS-DOS technical information to evaluate the potential for turning a profit from telephone service. In the near term, the number, which began operation last week, will provide information and technical support to DOS customers for $2 per call.

Overseas growth shows strain

The 20 largest U.S. computer companies collectively sold more overseas than in the U.S. in 1989, according to Gartner Group, Inc. The market research firm also reported that even though overseas business is accounting for a larger chunk of total revenue for these companies, growth in key overseas markets is also slowing. Gartner Group claimed that total sales abroad increased to 50.1% of the companies' total worldwide revenue last year, up from 48.4% in 1988. However, in the Asia/Pacific region, the overall growth for this group of 20 companies dropped to 12.7% last year. In 1988, the overall increase was 25%.

Pyramid adds low-end RISC system

Aiming at small-business or non-data-center environments, Pyramid Technology Corp. announced a low end to its Office Miservers family. Due to be released in the second half of the year, the MIS-1/1 has a reduced instruction set computing architecture and is based on the Unix operating system. It can handle 32 users while performing 14 million instructions per second, Pyramid said. The computer is not upgradable to more powerful models. At $55,000 and up, the MIS-1/1 is Pyramid's lowest-priced system.

Laptop prices trimmed

Compaq Computer Corp. last week lowered prices on its hot-selling LTE/286 notebook computer for the first time since its October 1989 debut. Last month was also the first time LTE production lines were able to keep up with market demand, according to the company. List price for the LTE/286 Model 40 fell $200 to $4,799. The Model 20's list price dropped $500 to $3,999.

AST joins patent supplicants

AST Research, Inc. last week became the latest personal computer clone vendor to enter into a patent cross-licensing agreement with IBM. "We view this agreement as recognition of our expanding patent portfolio and an acknowledgment of the technological contributions AST has made in the computer industry," said Safi Qureshy, AST president and CEO. Like previous cloners who have entered into such agreements, AST acknowledged that it will make fixed-dollar payments to IBM during the five-year term of the agreement.

Sterling tools bridge IBM gap

BY JEAN S. BOZMAN
CW STAFF

ANAHEIM, Calif. — Sterling Software, Inc. embraced IBM's system managed storage (SMS) software architecture last week with a suite of data-management software modules providing functions that IBM has yet to address.

Sterling's Storage Automation Management System (SAMS), introduced at a Sterling users' conference, combines graphical user interfaces, icons and artificial intelligence, allowing users to visualize glass-house disk-drive usage on a PC-DOS workstation.

Sterling, an IBM Business Partner, said, somewhat cautiously, that the SAMS software is not meant to replace IBM data-management functions outlined in IBM's SMS strategy.

"We have examined IBM's architecture, analyzed its shortcomings and enhanced it substantially," Sterling Chief Executive Officer Sterling Williams said.

The SAMS announcement comes at a time when users are waiting for IBM to provide additional products that will deliver the promise of SMS.

"SAMS is important now because it gives users a reason to stay with Sterling," said Michael Braude, a senior analyst at Gartner Group, Inc. in Stamford, Conn. Sterling is "still supplying technology that IBM is not," he added.

SAMS has several key components, all built on top of Sterling's decade-old DMS/OS data-management system. The system supports real-time queries as well as the automatic reallocation of disk space.

Williams *says Sterling's tools will enhance IBM's architecture*

Product features include the View user interface, designed to display SAMS disk-drive utilization data on a personal computer screen, and the Automatic Initiation Manager (AIM) for dynamically reallocating memory space in the disk drives.

The SAMS announcement stirred interest among the 600 users attending the conference, because many use IBM mainframes that run the older DMS/OS.

"Right now, we have a situation where one person is managing 200G bytes of data at any one time," said Randy Lebedz, senior data processing officer at First Fidelity Bank in North Brunswick, N.J. "We need to be able to manage our disk drives as a pool of data-storage resources. SAMS is going to allow us to manage those pools automatically and to adjust them where necessary."

Lebedz said he plans to install SAMS next month as part of an early support program; general shipments will come in July. SAMS is priced at $15,000 for the AIM and View modules only, and the full complement of SAMS modules is priced at about $80,000, Heuser said.

Officials at one SAMS beta-test site, Mutual Benefit Life Insurance Co. in Newark, N.J., anticipated that SAMS will provide better support for the firm's use of cooperative processing — in the form of centralized IBM-compatible mainframes and hundreds of IBM Personal Computers running OS/2. "We're screaming for the kind of functionality promised by IBM under the heading of System Managed Storage," said Robin Macfarlane, principal technical associate for systems programming at Mutual Benefit Life.

Morris

FROM PAGE 1

restitution to users of the Internet network who were harmed by the worm "would unduly complicate and prolong" the case, Munson said.

Initial reaction among computer professionals, many of whom viewed the incident as an experiment gone awry, was that the sentence was fair.

"It's a fair and appropriate sentence for a first-time offender," said Marc Rotenberg, Washington, D.C., office director at Computer Professionals for Social Responsibility. "If a person hasn't acted with malicious intent, it's not quite clear what you're trying to deter" with a sentence, he added.

Morris declined to comment either before the judge or outside the courtroom. His attorney, Thomas Guidoboni, indicated that he and his client felt the sentence was reasonable. Nevertheless, Guidoboni said he will appeal and challenge the law in an attempt to remove the felony conviction. Morris was convicted in January under the Computer Fraud and Abuse Act of 1986.

Morris, 24, unleashed a worm program on Internet on the evening of Nov. 2, 1988, while he was a graduate student at Cornell University. The worm ran amok, replicating wildly until it had clogged the memories of some 6,200 computers on Internet, a national network linking more than 180,000 computers at universities and other sites.

Stephen D. Cannerelli/Syracuse Newspapers

No precedents *to guide sentencing of Robert T. Morris*

Morris could have been sentenced to five years imprisonment, fined $250,000 and ordered to make restitution.

"I am relieved that he's not going to jail," said Andy Sudduth, a software engineer at Saber Software, Inc. in Cambridge, Mass., where Morris once worked briefly. "I don't think anybody doubts his motive was an inquisitive one," said Sudduth, who testified for the defense during the trial.

Professor Gene Spafford of Purdue University agreed with the sentiment, but said the lack of any jail time "may send the wrong message.

"Any kind of harsh sentence would have been inappropriate for Robert but appropriate for these kinds of activities," said Spafford, an computer crime authority. He said the sentence will not serve as a deterrent.

Prosecutors for the U.S. Department of Justice's criminal division, fraud section, declined to comment after sentencing.

Government sentencing guidelines were difficult to apply to a case without precedent. "We have not taken a position on sentencing, but the government's position is that some period of incarceration is warranted," prosecutor Mark Rasch told the judge.

Staff members Alan J. Ryan, Maryfran Johnson and Clinton Wilder contributed to this report.

Akers eyes improvement

'Substantial' gains ahead, IBM chairman says

BY CHARLES VON SIMSON
CW STAFF

PHOENIX — IBM Chairman John Akers provided an optimistic view of the company's prospects for the coming year at the firm's annual meeting last week, predicting "substantially improved financial performance."

While providing few details on how that improvement will be met, Akers also hinted broadly at the company's plans in several key markets.

Akers focused on double-digit growth in the market for the 3090 mainframe, Application System/400 minicomputer and Personal System/2 personal computer markets. He conceded, however, that problems in other product areas had contributed to a decline in earnings, after-tax margins and earnings per share.

"First, we were not able to bring some important new products to market as quickly as we had planned — large disk files and high-performance workstations," Akers said. "Second, our reported revenue and earnings were impacted by a stronger dollar."

Akers also said that a customer shift from buying to leasing large computer systems was a drag on revenue: "As a result, revenue was deferred, creating an unfavorable impact in the short term but a positive impact in the longer term."

In addition, Akers said that

Akers *hints broadly at plans in key markets*

while U.S. business was improving, the pace was not fast enough and did not meet management's expectations. As a result, the company allocated the $2.4 billion write-off in December to fund further consolidation and restructuring.

Akers said that by the end of 1990, IBM's U.S. work force will decline by an additional 10,000 people, 37,000 fewer in U.S. business than at the 1985 peak. Currently, there are 380,000 employees, he said.

Efforts grow at IBM to stop South Africa sales

PHOENIX — An effort to stop IBM from supplying computer systems to its former South African subsidiary is slowly gaining ground among employees and shareholders.

For the past several years, a loosely organized group of IBM employees and shareholders representing religious and social activist groups has been petitioning IBM to stop selling computers in South Africa.

At the company's annual meeting last week, holders of 65.9 million shares, or 17% of the company's stock, voted to stop sales to South Africa. Last year, holders of about 14% of stocks voted in support of the petition. In 1987, the first year of the drive, the group gained 9.9% of the stock vote.

The petitioners charge that while U.S. Department of Commerce regulations prohibit the sale of supplies to South African police and military operations, resale of IBM systems through military contractors is widespread, and argued that the computers form the skeleton of the weapons and population tracking systems that brace apartheid.

John Akers, IBM's chairman and chief executive officer, who spoke at the annual meeting, would say only that Information Services Management Ltd. — a company formed of IBM managers after the company officially divested its South African business in 1987 — complies with all Department of Commerce regulations and that to stop sales to the country would be an abandonment of the customers and employees of the company.

While IBM's position has remained unchanged over the past three years, support for ending sales to South Africa has grown, even within the conservative corporate climate at IBM.

"The movement has grown from just a few employees to 368," said James Leas, a physicist at the company's Manassas, Va., semiconductor facility, who spoke in favor of the proposal at the annual meeting. The 368 employees signed a petition calling on the company to cease using their "intellectual energy to aid in oppressing the people of South Africa."

CHARLES VON SIMSON

PS/2 system to aid travel

FORT LAUDERDALE, Fla. — IBM's vision of a standard platform for transportation industry applications was brought a step closer to reality last week with the announcement of a Personal System/2-based communications and application development support program.

The IBM Airline Communication Support Program (ACSP) connects applications used by travel agents, central reservation offices and airports to host-based central reservation systems. The program also supports peripherals to automate airport ticketing and boarding operations.

ACSP is the follow-on to IBM's 4-year-old PC-Travel program and is designed to provide connectivity and network migration from the airline line control protocol to other protocols and application portability between PC-DOS and OS/2 environments.

IBM also announced an Automatic Equipment Identification system, which uses radio frequency technology developed by Amtech Corp. in Dallas to track containers, tractors, trailers and rail cars as they move through the logistics process (see story page 54).

MICHAEL SULLIVAN-TRAINOR

HP plans line of mainframe-type tools

BY J. A. SAVAGE
CW STAFF

Since Hewlett-Packard Co. offers computers that cost nearly as much as mainframes and are reputed to work as fast as mainframes, the company this week plans to introduce mainframe-style management software.

Programs to monitor systems remotely, provide for unattended storage and backup, allow for automatic restart after software failure and analyze efficiency are among the packages slated for availability for the HP 3000 series by the end of the year. Much of that work is done manually in HP environments.

Initially, the products run under HP's proprietary operating system, MPE. HP will introduce the same type of products for HP's 9000 series, which will run the Unix operating system in six to 18 months, according to Richard Sevcik, general manager of the company's commercial systems division. He added that HP had not yet decided whether those products will be unbundled, which could allow them to run on any Unix machine.

Carolyn Griffin, an analyst at International Data Corp. in Framingham, Mass., said she was disappointed that the Unix product will take so long to get to market, but she was upbeat about not only the software but also the way it is being presented to users. "They're going at it conservatively — raising the ceiling for their installed base rather than throwing their sales reps into a 3090 [IBM mainframe] market," she said.

HP's main competitor in high-end systems is IBM mainframes, Sevcik claimed. He said that HP is aiming for more system products such as those provided under the IBM MVS/ESA operating system — for example, system managed storage.

Peter Kastner, vice-president of Aberdeen Group, a Boston-based market research firm, said that the software will indeed help HP "punch their way out of the midrange niche."

Sevcik said that a 400-user system, the Series 980 Model 200 (which is supposed to be out at the end of this year), with all the management software and peripherals will cost about $2.1 million, less than half the cost of a traditional mainframe. Each system software management product will be sold separately, with its price depending on configuration, according to Sevcik.

The mainframe comparison aside, the products will lessen operating costs, according to both HP and analysts.

Manual system management is expensive, Kastner said. "Labor accounts for 60% of the MIS budget," he said, adding that the aim of the new products is to reduce that expense.

HP 3000 tune-up

Hewlett-Packard Co. introduced the following products for its HP 3000 Series 900:

- Openview System Manager, which monitors networked systems from a personal computer-based console. Can be used for lights-out operations. Priced from $8,000 to $43,000 at main site and $2,800 to $15,000 at each managed system.
- Turbostore/XL II, which allows unattended storage and backup. Operates with digital audiotape and rewritable optical discs. Uses software data compression (previously had only hardware data compression). Priced from $2,200 to $46,500.
- Series 6300 Model 20GB. This rewritable optical-disc library system includes Turbostore/XL II. Can store 100G bytes. Priced from $42,200 to $86,500.
- SPU Switchover/XL, which detects CPU hardware failure and will switch to another HP Model 900 computer. Priced from $5,100 to $50,000.
- Autorestart/XL, which provides for automatic restart after software failure. Saves information for diagnostic purposes. Priced from $700 to $7,200.
- Allbase/Turbo Connect, which allows read-only access to Turboimage network databases. Priced from $2,400 to $23,000.
- Software Performance Tuner/XL, which collects and analyzes performance of native-mode applications. Priced from $5,950 to $14,950.

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TRENDS

Packet Networks

Since the adoption of the international X.25 standard, packet-switched networks have been a hot option for wide-area connectivity

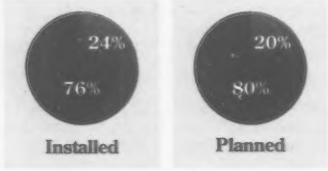
Equipment matters

The type of computer equipment at a site may govern the type of packet network installed. Public networks are preferred overall, but DEC VAX sites are more apt to go with a private network than IBM or plug-compatible mainframe sites

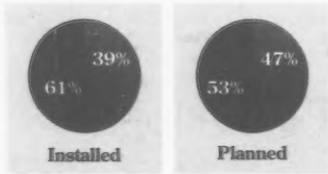
Percent of sites
Total: 18,000

Private Public

U.S. IBM/PCM mainframe sites



U.S. DEC VAX sites



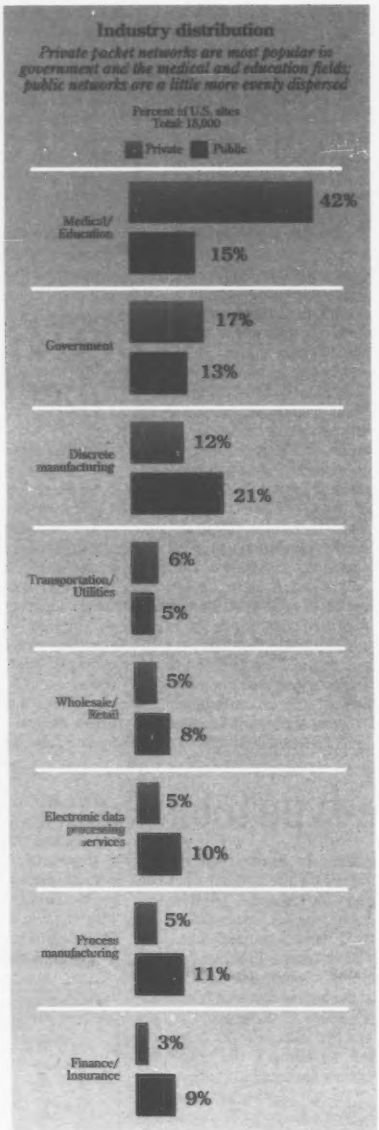
Source: Computer Intelligence, La Jolla, Calif.
CW Chart: Tom Monahan

Industry distribution

Private packet networks are most popular in government and the medical and education fields; public networks are a little more evenly dispersed

Percent of U.S. sites
Total: 18,000

Private Public



INSIDE LINES

Store this one

When IBM introduces the 4391 and 9370 follow-ons in June or July, it also plans to unwrap disk arrays for the Application System/400 and 9370 as a solution, as well as an IPI3 controller with built-in checksum for the AS/400, said a source with connections. "The disk failure rate for the AS/400 9332 and 9335 was higher than IBM expected," he said, which is why IBM nixed a later September release. IBM has found a way to link three of the 857M-byte drives introduced with its RISC System/6000 into one logical 2.5G-byte drive.

Through the back Windows

Rather than waiting for a Windows version of 1-2-3, which will be discussed during this week's Lotus developers conference, in about a month, users can spend $99 on a Windows add-in to 3.0. Lotus development partner Iris Associates has come up with 3-For-3, a Microsoft Windows 3.0 add-on for the protected mode or OS/2 version of 1-2-3 Release 3.0.

Has anyone told Ross?

One rumor out of our nation's capital last week was that Electronic Data Systems is negotiating to acquire a McLean, Va.-based subsidiary of Ford Aerospace. An EDS insider said the firm "has not been doing that great in terms of large systems contracts, so they are thinking of buying some companies." An EDS spokesman in Dallas said he had not heard the rumor and added that EDS does not comment on planned acquisitions.

No extension needed

This week marks the long-awaited introduction of the first piece of Microsoft's answer to IBM's Communications Manager, which is part of IBM's OS/2 Extended Edition. Co-developed with Digital Communications Associates, the Communications Select workstation will be unwrapped on Wednesday. The server piece is slated to ship 60 days after the anticipated June release of OS/2 LAN Manager, DCA says.

Those who can, do; who can't, recruit

Network Equipment Technologies seems to be finally thawing toward frame relay, the high-speed networking standard that its rival Stratacom has been implementing. NET quietly hired away Stratacom's director of product marketing, David Owen, who also happens to be the co-patent holder of Stratacom's IPX T1 switch, an NET spokeswoman told us.

Into the archives

Manuscript, Lotus' pass at word processing, seems headed for the retirement home. At last week's annual meeting, Lotus Chairman Jim Manzi said that while the company will continue to support Manuscript users, it will not introduce Windows or OS/2 versions. Instead, he suggested focusing on Lotus' partnership with Wordperfect, which has cooperated with Lotus in developing a common interface for OS/2 products.

The Street's got 'em in retreat

Some software executives are running scared that Wall Street's uncertainty about Oracle might damage their own stocks. A handful of executives said they have established an informal telephone network across the U.S. Jeff Papows, senior vice-president at Cognos, who brainstormed the teleconferencing idea, said the market can support 15% to 25% growth for most companies. Oracle CEO Larry Ellison is "the only one who wanted to grow at 100% a year, every year," Papows said.

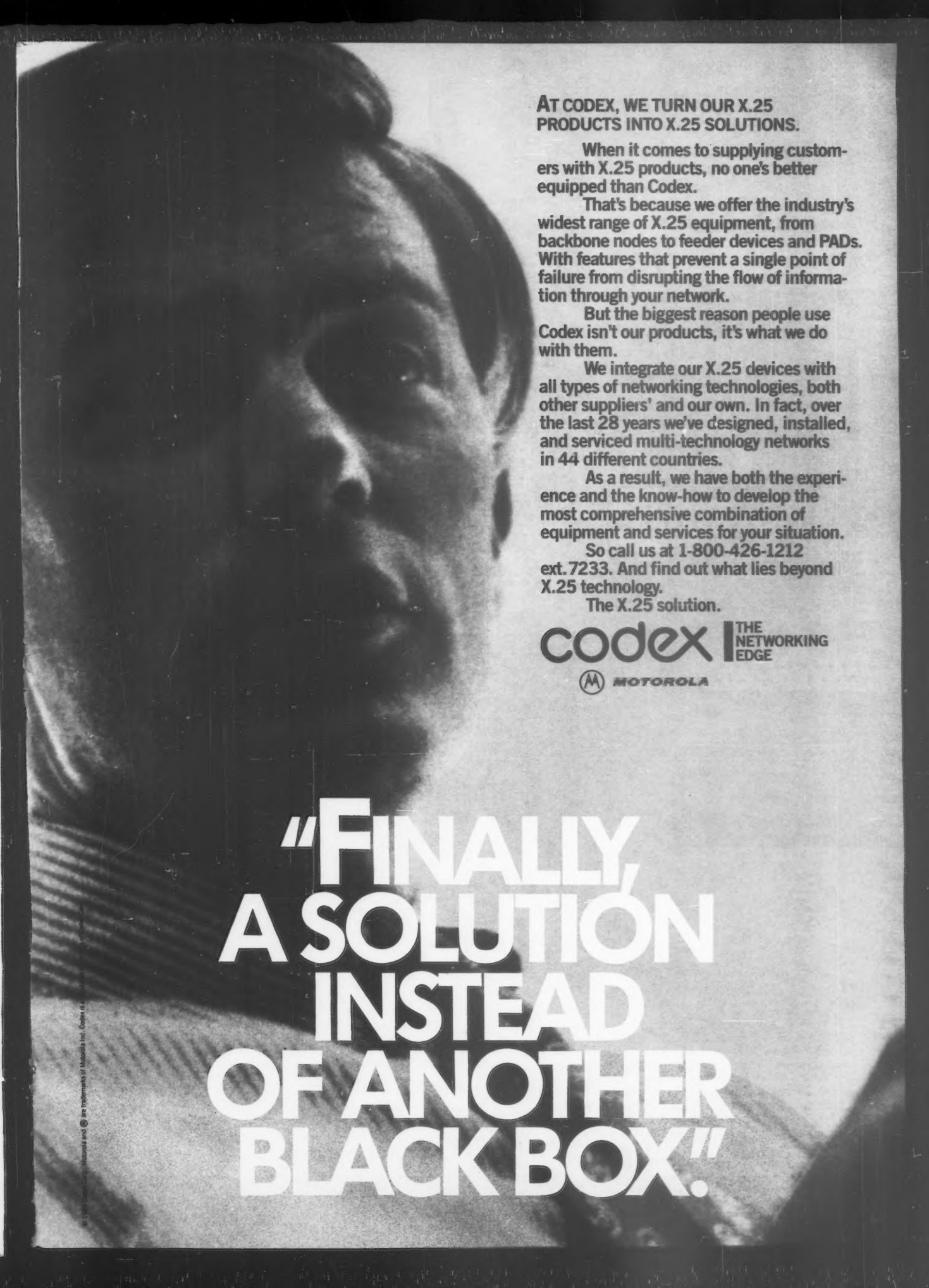
Could Washington state's antipathy to the influx of Silicon Valley weirdness be due to antics among the rain-slicker crowd just south of the border? At Intel's Personal Computer Enhancement Operation in Hillsboro, Ore., when one product-engineering team lost in a bid to beat another team to market, they broke out the lipstick and toenail polish, some sensible shoes (heels kill the back) and a few nice skirts and served pizza to the victors in the company cafe. Well, we don't just print the usual stuff here, so send your tips to News Editor Pete Bartolik by calling 800-343-6474, faxing to 508-875-8931, or address them to COMPUTERWORLD via MCI Mail.

NEXT WEEK

Managing an IS operation on Wall Street right now requires the ability to simultaneously wrestle with a bear market and find the resources to support promising new products. **Rick Adam**, a partner in charge of global operations and information technology at Goldman, Sachs & Co., discusses the challenges of the job in Executive Report.

Joyce Ravid

Are you convinced that Unix will be the operating system of tomorrow? Don't be so sure. Mach, a Unix-based challenger, is coming on strong. Advocates say it is highly portable, multiprocessing and secure. More than 200 corporations and universities are now reviewing Mach for daily use. For the whole story, see In Depth.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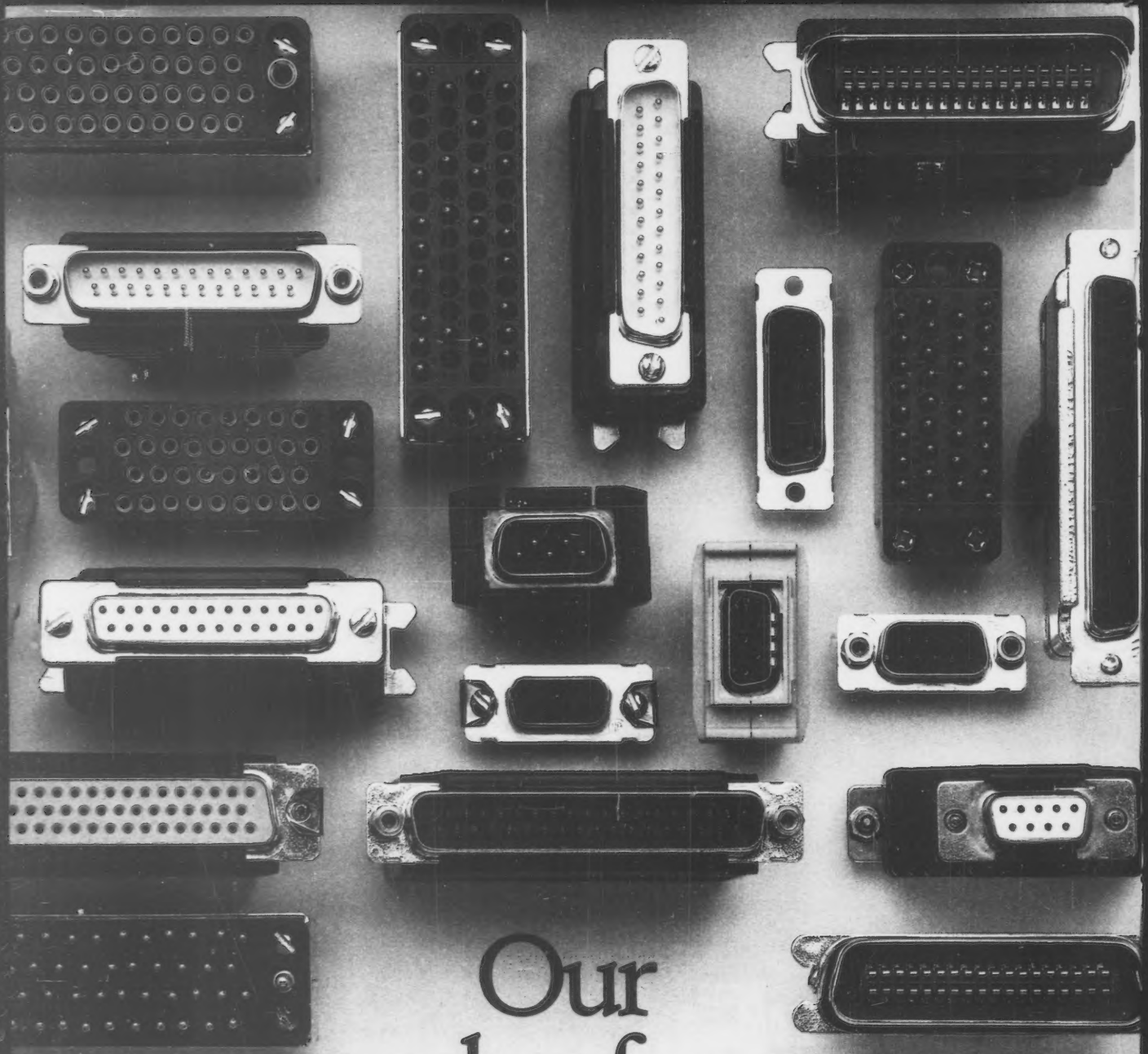

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